EVALUATING OPPORTUNITIES FOR ENHANCED GEOTHERMAL SYSTEM-BASED DISTRICT HEATING IN NEW YORK AND PENNSYLVANIA

A Thesis

Presented to the Faculty of the Graduate School

of Cornell University

In Partial Fulfillment of the Requirements for the Degree of

Master of Science

by

Timothy J. Reber

May 2013

ABSTRACT

Enhanced Geothermal Systems (EGS) have the potential to supply a significant fraction of the low-temperature (<125°C) thermal energy used in the United States, and Geothermal District Heating (GDH) networks provide the primary means for distributing and selling that energy. To encourage wider discourse about utilization of low-temperature geothermal resources, the potential for EGS district heating in the U.S. states of New York and Pennsylvania was evaluated. Opportunities were evaluated on two levels. First, geographic locations and towns with the most promise for GDH were identified as the best communities for initial feasibility studies and future GDH deployment. Second, factors contributing most to the cost of EGS district heating were identified as possible targets for research and development (R&R) efforts.

In order to evaluate these opportunities, a model was developed to simulate an EGS district heating system at every population center within the study region. Incorporating an updated geothermal gradient map, buildings and energy census data, an EGS district heating model, and investment and operation and maintenance costs, a unique levelized cost of heat (LCOH) from GDH was estimated for each community. These LCOHs were compiled into a supply curve and used as the primary metric with which to compare GDH systems across the region and identify the most promising communities in which to focus initial GDH efforts.

An analysis of the sensitivity of the LCOH to various model inputs provided a means to identify the factors with the most influence on LCOH and thus pinpoint the most effective technology components to target with research and development efforts in order to reduce the cost of GDH and increase its ability to compete with more traditional heating methods. Further, three separate technology cases were evaluated in order to investigate the capabilities of EGS district heating given both the state of the technology today and its potential in the future given improvements to EGS technology.

It was found that EGS district heating certainly has the potential to supply clean, reliable, cost-effective energy for space and water heating for New York and Pennsylvania in the near future. However, modest improvements in EGS technology, escalation of current natural gas prices, or some form of government incentive will likely be required before GDH is able to compete with other heating alternatives today on purely economic grounds. EGS reservoir flow rates, drilling costs, system lifetimes, and fluid return temperatures have significant effects on the LCOH of GDH and thus will likely provide the highest return on R&D investment.

BIOGRAPHICAL SKETCH

A native of Glen Ellyn, Illinois, Tim Reber spent a happy childhood as the younger of two siblings. Involved in theater, music, and soccer, he graduated from Glenbard West High School in 2005. After high school he attended Northwestern University, where he double-majored in Developmental and Evolutionary Biology and Earth and Planetary Sciences. His undergraduate education took him to Costa Rica where he spent a semester studying tropical ecology and environmental science with the Organization for Tropical Studies. It was there that his interest in sustainable development and the interrelation of environmental with societal concerns flourished. In 2009 he graduated Cum Laude and received his Bachelor's degree.

After a brief foray into biogeochemistry at the Stroud Water Research Center in Avondale, Pennsylvania, Tim took a job as a mud-logger and was quickly promoted to geo-steering for natural gas drilling operations in the Marcellus Shale in Pennsylvania and West Virginia. He returned to school in 2010 to pursue a Master's degree at Cornell University. A student in the Earth and Atmospheric Sciences department and a member of the Cornell Energy Institute, he pursued an interdisciplinary education in geology, renewable energy, and sustainable development. He split his time between evaluating the potential of low-temperature geothermal resources in the northeast and studying holistic, integrated approaches to sustainable community development and re-development at home and abroad. During his time at Cornell he had the opportunity to work on a variety of projects with people of diverse academic backgrounds, including a summer interning at the National Renewable Energy Laboratory in Golden, Colorado. Upon completion of his Master's Tim hopes to become actively involved in the wider deployment of renewable energy technologies to meet sustainable community development goals.

For Gram, who helped push me to return to school in the first place, and whom I know would be so proud to have seen me finish.

ACKNOWLEDGEMENTS

I cannot claim sole responsibility for this thesis. Numerous people have provided assistance, guidance, and support in a variety of forms throughout my time at Cornell. This includes fellow students, faculty, university staff, friends past and present, and of course my family.

First I would like to sincerely thank my advisor and mentor, Jefferson Tester, who brought me to Cornell and who has provided guidance and support from day one. Not only has he encouraged me at every step of the way as my own interests have evolved, but he has helped me pursue those interests and provided opportunities for which I am truly grateful.

I would like to thank George Stutz, Elaina Shope, and Andrea Aguirre, with whom I worked closely during the first half of my time at Cornell. You have been great friends and colleagues and it was truly a pleasure working with each of you.

I must also thank Koenraad Beckers, without whose assistance with GEOPHIRES this work never would have been completed as it is. I would also like to thank Maciej Lukawski, Konstantinos Vilaetis, and Lizeta Gkogka, who also provided significant input into this project.

Next I would like to thank all of the students, faculty, and staff affiliated with the Tester group, the Cornell Energy Institute, and the Department of Earth and Atmospheric Sciences. You have all provided support and lessons in various ways over the years without which my time here would not have been nearly as enriching or fulfilling. Specifically I would like to thank Teresa Jordan for her instruction and Polly Marion, Savannah Sawyer, and Teri Carey for all they do to ensure that the students get as much as possible out of the Energy Institute and EAS.

I must also acknowledge our colleagues at Southern Methodist University and at West Virginia University, whose collaboration has helped make this project possible.

To all of my friends from Glen Ellyn, Northwestern, and now Cornell, I would sincerely like to thank each of you for your friendship over the years and for making the good times great and the bad times bearable.

Finally, I would like to thank my family, whose unyielding input of love and support (not to mention time and finances) is responsible for my being where I am today. A simple thank you hardly does them justice.

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

LIST OF ABBREVIATIONS

AAPG	American Association of Petroleum Geologists
BHT	Bottom Hole Temperature
BTU	British Thermal Unit (1 BTU ≈ 1,055 Joules)
COSUNA	Correlation of Stratigraphic Units of North America
EGS	Enhanced Geothermal System(s)
GDH	Geothermal District Heating
GEOPHIRES	Geothermal Energy for the Production of Heat and Electricity Economically Simulated (software package)
GETEM	Geothermal Electricity Technology Evaluation Model
GW_{th}	Thermal Giga-Watts (1 GW_{th} = 1000 MW_{th})
LCOH	Levelized Cost of Heat
MCF	Thousand Cubic Feet of Natural Gas (1 MCF ≈ 1023 MBTU)
MBTU	Thousand British Thermal Units (1 MBTU = 1000 BTU)
MMBTU	Million British Thermal Units (1 MMBTU = 1,000 MBTU = 1,000,000 BTU)
MW_{th}	Thermal Mega-Watts (1 MW_{th} ≈ 3.412 MMBTU/hr)
NY	New York
PA	Pennsylvania
SMU	Southern Methodist University
T_{ps}	Primary Fluid Supply Temperature
T_{pr}	Primary Fluid Return Temperature
T_{ss}	Secondary Fluid Supply Temperature
T_{sr}	Secondary Fluid Return Temperature

CHAPTER 1

BACKGROUND AND MOTIVATION

Recent years have seen an escalating chorus of voices across the United States, and the World, speaking out for a change in the way society uses and manages energy, particularly fossil fuels. However, while this chorus has continued to crescendo it also seems to have grown increasingly discordant and now more resembles polarized and incoherent shouting rather than a unified voice. While many claim that we need to move to renewable energy because the United States' burning of fossil fuels is releasing millions of tons of carbon dioxide into the atmosphere every day, which are directly responsible for causing global climate change, others argue that we need only to shift from foreign to domestic fossil fuels, strictly for reasons of national and economic security. Still others reject both of these views and believe that there is enough petroleum out there still to be discovered and produced that we need not concern ourselves at all with the environmental, economic, and political implications of our fuel supply.

On the solution side of the problem, things are even worse. While some believe that wind and solar energy are clearly the best options for the environment, others feel that increased domestic coal and gas production can provide the kind of energy security we need. Though some feel that corn ethanol and biofuels are the best fit for America's farmers, others claim that only nuclear power will be capable of delivering the kind of reliability and price assurance demanded by the American people.

Amidst all of this noise the important point is lost: the United States *does* have a problem. Regardless of where one stands on fossil fuels, eventually, somewhere in the future there is a problem waiting to happen: be it global warming in the coming century, waning petroleum reserves and escalating prices in the coming decades, or perhaps political instability and a global oil war in the coming weeks that will strangle our foreign fuel supplies and destabilize the industry. And whether the problem is a slow moving freight-train just starting to pull out of the yard or a bullet train already racing towards us, the fact remains that it is going to be hard to stop it.

That is why it is so vitally important that we begin to wean at least *a portion* of our energy use off of fossil fuels – if only *at the very least* to preserve and extend the lifetime of our existing and future fossil fuel supplies and ensure longer-lasting industry stability for those fossil fuels that will inevitably continue to serve a role in our collective energy future. This will require an open and honest discussion and, more importantly, a shift in the way we conventionally think about energy.

This thesis seeks to spur such discussion by evaluating opportunities for the use of low-temperature geothermal resources in district-heating applications in New York and Pennsylvania. The remainder of Chapter One will provide necessary background regarding how energy is currently viewed in the United States, explain a more intelligent framework in which to think about energy, and explain how geothermal systems work and how they fit into this new energy framework. Chapters Two through Five will be outlined at the end of this chapter.

1.1 How We Think About Energy

1.1.1 How Energy Is Typically Viewed Today

During the last decade the United States' total energy consumption has remained fairly constant, fluctuating between just under 95 to just over 100 quadrillion BTU's (or "quads"), or 100-105 exajoules (EJ) since 2000 (EIA 2012). This level of energy consumption accounts for 20-25% of the world's total annual consumption. Typically, most energy analyses look at energy consumption on the basis of end-use sector. That is, the primary lens through which we view energy is the economic sector to which it is going – not necessarily any intrinsic property of the type of energy being consumed.

Figure 1.1, produced by Lawrence Livermore National Laboratory, illustrates the flow of energy from primary sources to its consumption as an energy service. The figure is characteristic of the conventional way we think about energy: Energy may come from any number of sources, depicted on the left side, and is then delivered in one form or another to one of the four main sectors of consumption: residential, commercial, industrial, or transportation. Additionally, there is a fifth, intermediate sector—electricity generation—that accounts for energy sources that are first converted to electricity by large power companies and delivered to homes, businesses, and industries. The remaining portions, mostly coming from petroleum and natural gas, are delivered to the end-user in forms *other* than electricity—e.g. gasoline, jet fuel, heating fuel, and others.

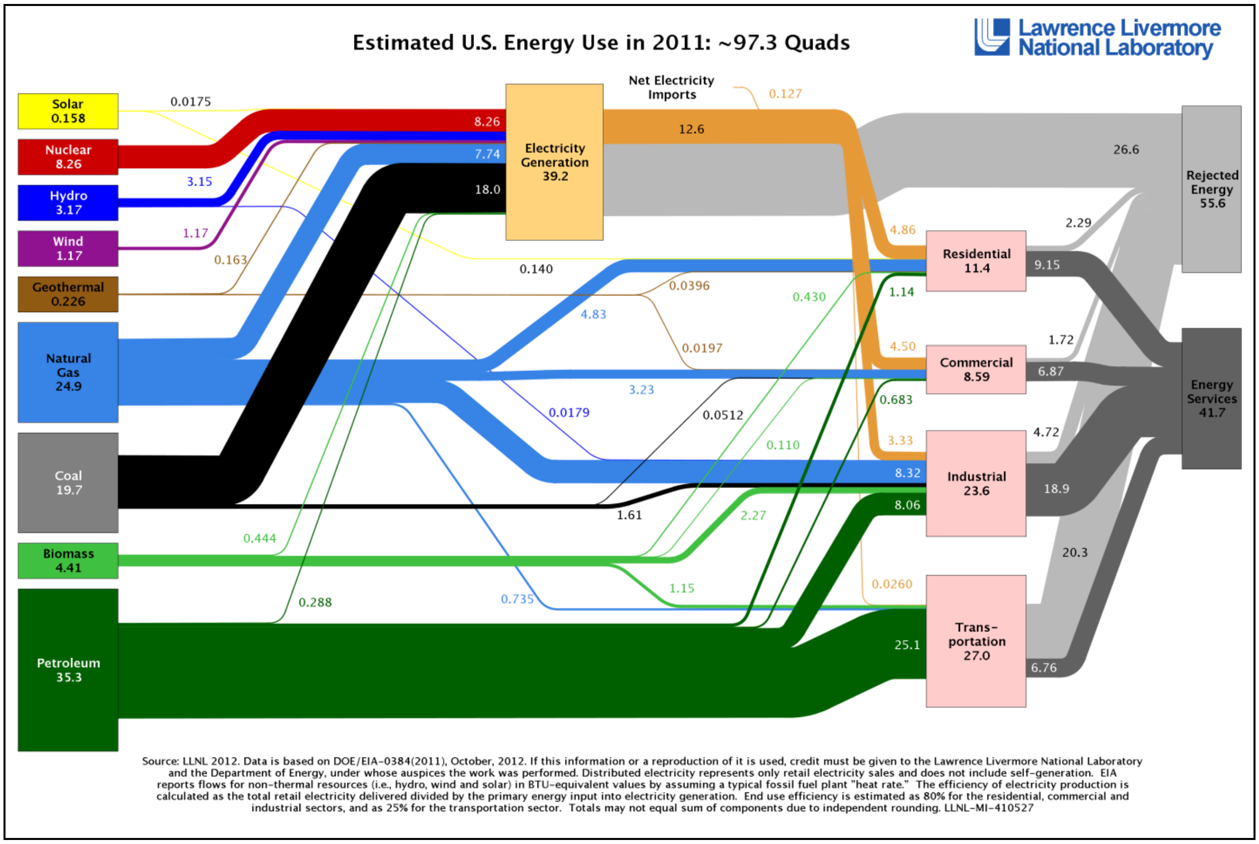


Figure 1.1 Current energy use in the United States (https://flowcharts.llnl.gov/).

However, there is an inherent problem with this “old” way of thinking about energy use: If one is presented only with the economic sectors that are using our energy then it is very difficult to obtain any useful information about what the energy is actually *doing* for us when it is used. The natural gas and petroleum being delivered directly to the residential, commercial, and industrial sectors, for example, could potentially be used to heat a building, make hot water, fuel an electric generator, cook a meal, or, in the case of the industrial sector, heat an industrial process or even be used as raw material for manufacturing, as in the case of many fertilizers, plastics, and other chemicals. Similarly, the electricity delivered by the electricity generation sector could be used to power appliances and electronics, heat and cool buildings, cook food, or perhaps even charge an electric vehicle. Without a detailed understanding of what exactly our energy is doing for us, it becomes difficult to make decisions regarding how to best manage and conserve our energy resources.

1.1.2 The Thermal Energy Spectrum

Figure 1.1 also highlights the immense amount of energy—more than *half* our total consumption in fact—that is outright wasted as "rejected energy." There are two main reasons for this. One is the inherent thermodynamic limitations associated with burning fossil fuels to generate electricity. Even today, the most state-of-the-art gas-fired thermal power plants have a maximum thermal-to-electric efficiency of around 60%—that is, they can convert 60% of the thermal heat energy produced by fuel combustion into usable electricity (Tester et al. 2005). Co-generation plants (also known as combined heat and power) are now catching on as a way to make use of the excess waste heat produced during fuel-to-electricity conversion for space heating or industrial processes, but even these systems "waste" some heat. There are further energy losses that occur during the electricity transmission process—on average around 10% losses for the U.S. transmission infrastructure. In the transportation sector, automobile and other vehicle engines are even worse than power plants at converting the thermal energy from fuel combustion into usable mechanical drive.

The other cause of wasted energy is a result of the widespread mismatch of energy sources with appropriate end-uses. Fox et al. (2011) analyzed the "thermal spectrum" of energy use in the United States and determined that a large portion of our energy is used to power processes that can be driven by heat energy at relatively low temperatures (see Figure 1.2). Their study found that roughly one-third (~32 quads) of all energy in the U.S. is used to power processes that can theoretically operate using temperatures of less than 260°C. Further still, *one-quarter of our total energy is used to power processes that require temperatures of less than 125°C*.

For example, space and water heating, which account for roughly 15% of total U.S. energy consumption when electrical losses are included, require relatively low-temperatures of only 40-60°C, yet these processes are still primarily driven by fossil fuel combustion. Fossil fuels, with the capability to burn at temperatures well in excess of 1000°C, have an incredible work-producing potential, or exergy. By using such high-grade fuels to power low-temperature processes, we are essentially using them in the most inefficient manner possible; they are

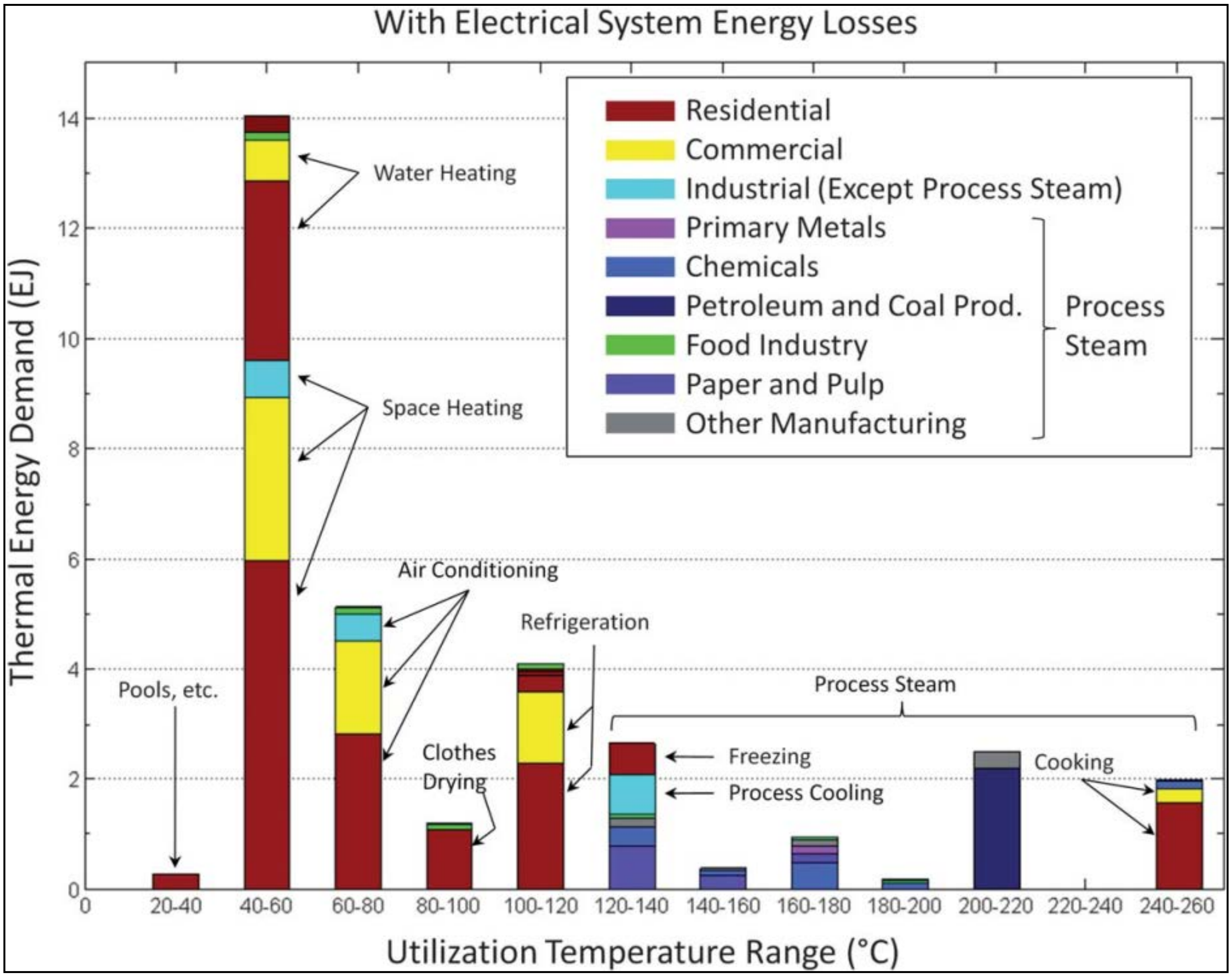


Figure 1.2 The thermal spectrum of energy use in the United States (Fox et al. 2011).

combusted at high temperatures and then immediately down-graded to simply heat water or air. In some extremely inefficient cases, energy for space and water heating is provided through electricity, which results in even greater exergy and primary energy losses due to the inherent inefficiencies in the way electricity is produced and delivered today.

Many common industrial processes—such as drying, evaporation, concentration, distillation, and, most importantly, steam generation (used for hundreds of processes)—also require relatively low temperatures below 260°C, yet are almost invariably fueled through fossil-fuel combustion or electricity. The U.S. manufacturing industry is responsible for the vast majority of this low-temperature process heat use, with estimates ranging from 4.7 to 6.8 quads annually, or more than 5% of total U.S. energy demand (Fox et al. 2011, DOE EERE 2012).

1.1.3 A Better Way to Think About Energy

In order to make any discussion of how to improve our energy utilization more productive, we must distance ourselves from the conventional mode of thinking of energy as a single, uniform commodity. Instead we must embrace the concept that all energy sources are *not* created equal. Because of their different exergetic potentials, and the inevitable exergy losses that occur each time an energy source is converted from one form of energy to another (i.e. chemical, thermal, electrical, or mechanical), some energy sources are clearly better suited to particular end-uses than others. We must begin to think about the exact processes and purposes for which our energy is being used and match each energy source to the most appropriate end-use.

For example, electricity is absolutely essential for modern lighting, computers, televisions and other appliances, but is one of the least efficient ways to heat a bedroom or cook a meal. Similarly, petroleum may not be the best fuel to heat water for that hot shower in the morning, but it is a crucial fuel for industrial processes that require high temperatures in excess of 500°C and serves as a vital raw-material feedstock for the chemicals industry, gasoline, and diesel and jet fuels.

An ideal energy framework would thus match energy inputs with the most practical end-use, taking into account the limitations of a particular source. Within this framework, there is a place for nearly every energy resource. Renewable energies such as wind power, hydropower, and solar photovoltaic cells generally only produce electricity as an output (wind and hydropower may be used directly to generate mechanical work in some applications), so they would be reserved for electricity production. Like fossil fuel electricity generation, these renewable electricity options also have less-than-ideal conversion efficiencies of input energy to electricity output. However, whereas fossil fuels have negative environmental (and indeed economic) consequences associated with inefficient energy conversion and heat loss, the negative consequences associated with inefficiency in most renewables (with the exception of biomass) are primarily economic rather than environmental. Although nuclear power would also play a major role in this new energy framework for electricity generation, its adaptability to other energy forms is severely limited.

Energy used at relatively low end-use temperatures would best be provided through energy sources that are naturally thermal in a similar temperature regime, e.g. low-temperature geothermal heat and solar thermal energy. In principle, these sources could replace a large portion of the low-temperature energy requirements—outlined above—that account for about one-quarter of our national energy budget.

Transformation of the transportation sector within this new energy framework may follow any of several proposed paths—from biofuels to electric to hydrogen-based vehicles. In

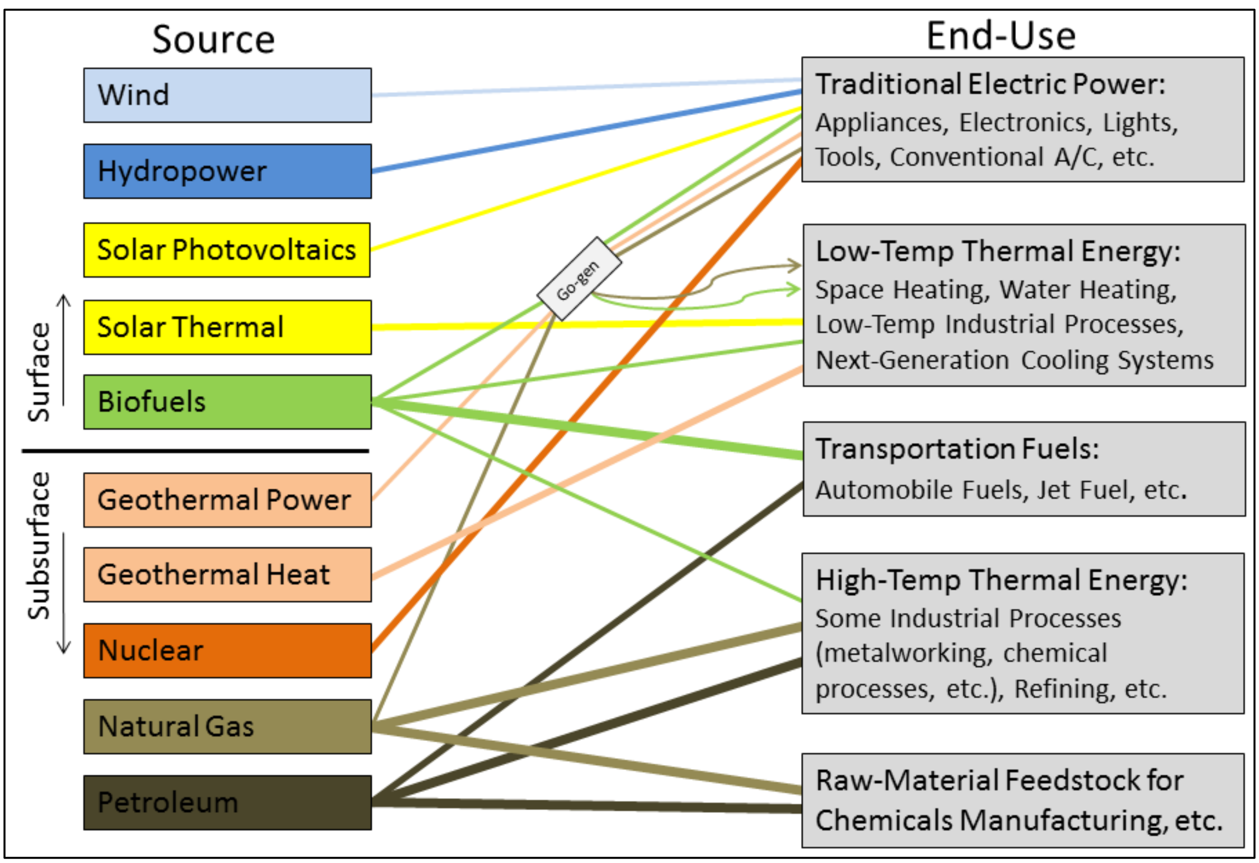


Figure 1.3 A more effective way to think about energy use will match energy sources with the most appropriate end-use.

the near- and mid-term, however, transportation is likely to remain dependent on standard liquid fuels, which can be provided by biofuels and fossil fuels.

Fossil fuels, with their uniquely adaptable nature, would become a flex-fuel, serving several purposes. They would remain important as the fuel of choice for high-temperature industrial processes, continue to serve as one of the primary raw-material feedstocks for the manufacturing industry, and, due to their flexible nature, be able to augment any of the other energy-consumption sectors on an as-needed basis.

This new view of energy, as well as the potential shifts in energy-sourcing that could be brought about by adopting the new framework, are depicted in Figure 1.3. Note that there is still a role for traditional fossil fuels such as natural gas and petroleum. However, by replacing some of the most inefficient uses of fossil fuels—i.e. electricity generation and as a low-temperature heat source—we can reserve high-grade fossil energy resources for when they are truly needed and irreplaceable. In doing so, we can at once cut back on our fossil fuel intensity while ensuring a longer-lasting supply and stability for the oil and gas industry.

1.2 Geothermal Energy

With this new energy framework novel new opportunities for renewable energy development and innovation become apparent. One such opportunity that has potential to displace a portion of our fossil fuel dependence and is beginning to receive renewed attention is direct-use of geothermal heat.

1.2.1 How Geothermal District Heat Works

There is more than just oil and natural gas trapped in the rocks beneath our feet – there is also an immense amount of thermal energy stored as heat. According to even the most conservative estimates, enough of this stored crustal heat is accessible (at depths of 10 km or less) in the United States to satisfy the current total energy demand of the U.S. for the next 2,800 years (Tester et al. 2006). Geothermal district heating systems utilize this energy to provide low-temperature heat for space heating, water heating, and other low-temperature processes.

As one travels deeper below the surface of the earth, the temperatures encountered in a particular location will increase at a reasonably predictable rate, following what is called the "geothermal gradient." The average global geothermal gradient is roughly 25°C/km. That means that on average the rock temperatures 4 km below the surface of the earth are about 100°C. However there are certain areas where the gradient might be significantly higher or lower than this average. One well-known example is the Yellowstone caldera in Wyoming.

Geothermal resources have been used to generate electricity for over a century, and their direct use for heating spas and baths goes at least as far back as the Roman Empire. In some cases, geothermal water hot enough for space or water heating applications can be found at or very near the surface. In this case utilization of the resource for heat or power generation can be quite affordable as deep drilling is unnecessary. The geofluid is captured and, in most cases, pumped through a heat exchanger that transfers a portion of its thermal energy to a secondary fluid. While in electricity generation applications this hot secondary fluid is expanded through a turbine to generate electrical power, in heating and direct-use applications it is piped through a district heating network directly into nearby homes, businesses and other establishments, where it is typically circulated through a hot-water heat exchanger or other heating exchange system. Typically a few dozen buildings to an entire city may be connected to a geothermal district heating (GDH) system. In addition to space and water heating, hot geofluid can be used to heat swimming pools or greenhouses, as a heat source for aquaculture, food and crop drying, snow melting, or dairy processing (i.e. pasteurization), or for other agricultural and industrial processes (Lund 2007, Gunnlaugsson 2008, Kiruja 2011).

One of the major drawbacks of geothermal district heating, however, is that it is location limited. The heat obtained from these systems must be transferred to its end-user in a network of insulated pipes. For economic reasons this hot fluid is rarely transported more than a few kilometers from its source before it is used. Hence "hot spots" underneath highly populated areas are of particular interest, as a large GDH system could be used to meet the space and water heating needs of several large apartment complexes or commercial buildings, an entire subdivision, or more.

The largest geothermal district heating system in the world is in Reykjavik, Iceland, where 52 shallow wells provide about 70 million m^3 of 85-130°C water annually that heats 99.9% of the city of Reykjavik, in addition to heating pools and melting snow (Gunnlaugsson 2008). The system, which first began heating in the 1930's, now has a capacity of nearly 400 MW_{th} and was serving 183,000 people as of 2008.

The United States currently has more than 20 geothermal district heating systems in operation, all of which are in the western U.S. where higher-grade geothermal resources can be found (Thorsteinsson 2008). The city of Boise, ID alone has four separate GDH operations. These systems supply hot water between 65-80°C and collectively serve roughly 350 establishments—including the 30+ building Veteran's Memorial Hospital complex (Thorsteinsson 2008). Further examples of geothermal district heating systems can be found all around the world, including Turkey, Italy, New Zealand, and Japan (Lund 2007).

1.2.2 Enhanced Geothermal Systems

Unfortunately, free-flowing hot geothermal (hydrothermal) systems are limited to relatively few locations globally. To occur naturally they require a fortunate confluence of three elements: rock that is hot enough to heat subsurface fluids, the fluid itself, and sufficient permeability to allow fluid to flow through the hot rock and eventually make its way towards the surface. In cases where hot rock exists at comparatively shallow depths but either natural fluid or sufficient permeability (or both) is lacking, an Enhanced Geothermal System (EGS) may be used to tap into the thermal energy stored in those hot rocks.

Figure 1.4 illustrates the concept behind a typical EGS. At least two wells (i.e. a "doublet") must be drilled—an "injection well" and a "production well"—to a suitable depth to reach the desired temperature. For space and water heating this temperature is usually around 80°C or more, while industrial processes or electricity generation may require significantly higher (>120°C) temperatures. Once the two wells are drilled, the rock between them is stimulated using a hydro-fracturing process similar to that used in shale-gas production. Water is then pumped down the injection well and into the fractured zone, where it is heated by contacting the surrounding hot rock. The heated water is then pumped to the surface via the production well(s), at which point its thermal energy can be transferred to a secondary fluid using a heat exchanger. The now cooled circulating water is reinjected back into the reservoir through the injection well(s) to create a closed-loop system with minimal water losses. The hot

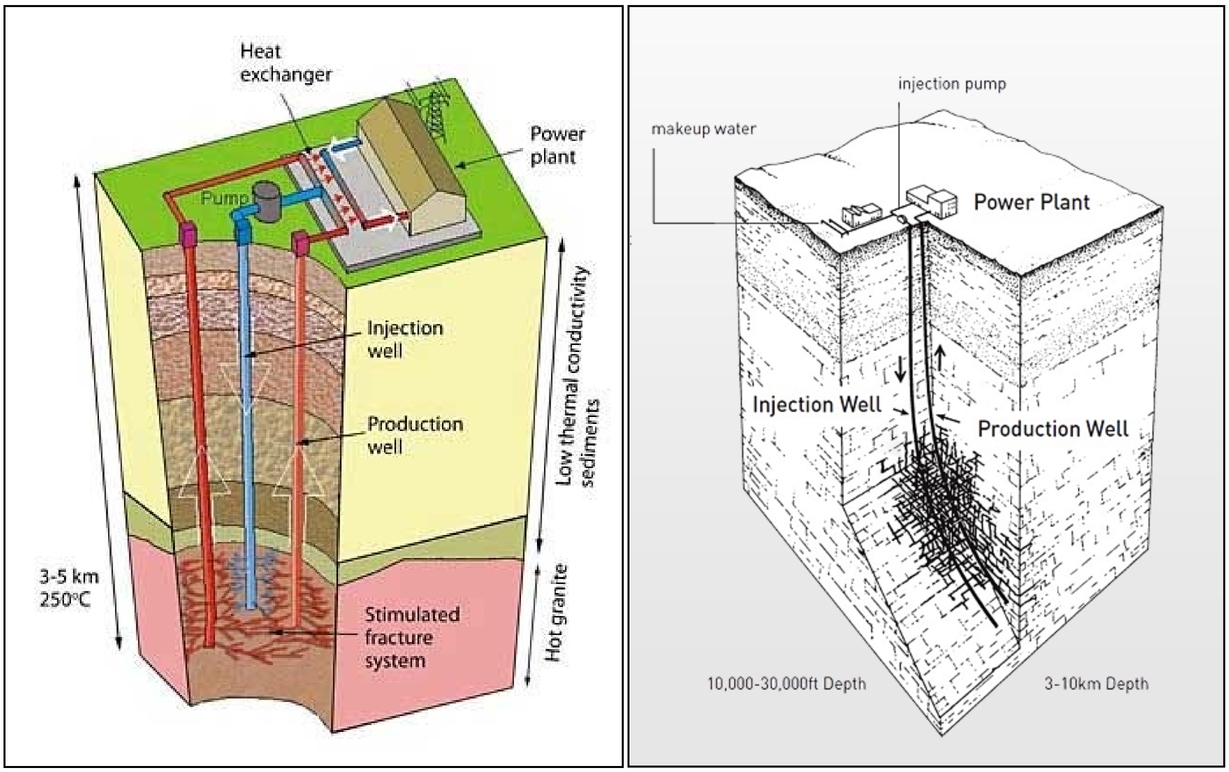


Figure 1.4 Examples of Enhanced Geothermal Systems (EGS). A "triplet" is pictured on the left and a "doublet" on the right. (www.geothermalworldwide.com; Tester et al. 2012)

secondary fluid can then be sent through a power-generating turbine or piped to homes and businesses to be used for space- and water-heating or other direct-use applications.

While EGS technology has yet to be deployed on any large, commercial scale, there are several examples of working systems across the globe, including sites at Fenton Hill, New Mexico, Soultz, France and Rosemanowes, England. These experimental sites have demonstrated the technical feasibility of EGS in low-permeability crystalline rock and will continue to shed light on challenges that remain for EGS to become economically viable (Tester et al. 2006). The Soultz site has even successfully operated a 1.5 MW_e power plant since 2008 (Genter et al. 2010).

1.3 Objectives and Approach

Development of low-temperature geothermal resources for direct-use applications in regions that have significant heating demand—such as the northern tier states in the U.S.—poses a considerable opportunity. By supplying a significant fraction of required heat for low-temperature processes including space and water heating, low-enthalpy geothermal resources could help move the United States away from its traditional energy supply patterns towards a more sustainable end-use oriented energy supply system. **The objective of this thesis is to evaluate opportunities for the use of low-temperature geothermal resources in district-heating applications in New York and Pennsylvania and to develop a supply curve for those applications.**

Supply curves are frequently used to visualize the cost of supplying a given quantity of a certain good (in this case heat). For energy resources the price of supplying the good (i.e. energy) will generally increase as more total energy is required. This is because the highest-quality and most affordable resources will generally be developed first, followed by successively poorer-grade and more expensive resources. The supply curve developed in this study will plot the total cumulative heating capacity in the study region against the projected levelized cost of supplying that heat. This will help identify GDH opportunities in two ways: (1) by highlighting specific locations where EGS GDH would be most affordable relative to the rest of the study area and (2) by providing a tool to easily visualize and compare where potential for cost-reduction might be greatest for GDH development in the region.

Because of the location-specific nature of district heating applications, end-users must reside near the geothermal resource they are utilizing. In addition, like electricity, thermal energy is difficult to store and thus must be supplied on an as-needed basis, making the particular spatial- and temporal-demand profile of a given area of crucial importance in the design and operation of a geothermal district heating (GDH) system. Hence, the first goal is to identify specific locations across New York and Pennsylvania where high geothermal gradients coincide with towns with a sufficiently high heating demand and demand density. This will be achieved using an iterative approach to model a conceptual specified GDH system in each community in the target region. Estimated levelized cost of heat (LCOH) will be used to plot the supply curve for the region, compare GDH systems across communities, and identify the most promising communities for future GDH development.

The second goal is to identify potential opportunity for reducing the cost of GDH systems. This will be achieved through a simple sensitivity analysis of the variables used for inputs into the supply curve model to see how they affect estimated LCOH.

The remainder of this thesis is organized as follows: Chapter Two presents an assessment of the geothermal resources available in New York and Pennsylvania. Chapter Three describes the model developed here for geothermal district heating (GDH) and the subsequent development of the GDH supply curve. Chapter Four documents results of the modeling work, focusing both on identifying the most attractive towns in NY and PA for pilot GDH projects and shedding light on opportunities for cost-reduction of GDH. Finally, Chapter Five briefly provides the implications and conclusions of this study for GDH development in the U.S.

CHAPTER 2

GEOTHERMAL RESOURCE ASSESSMENT IN NEW YORK AND PENNSYLVANIA

This chapter appeared in whole or in part at the 2012 Stanford Geothermal workshop as a paper entitled "Geothermal Resource Assessment: A Detailed Approach to Low-Grade Resources in the States of New York and Pennsylvania," co-authored by Elaina Shope, George Stutz, Gloria Aguirre, Teresa Jordan, and Jefferson Tester.

The resource mapping portion of this project is part of a collaborative effort with Southern Methodist University (SMU), Siemens, and other groups to create an updated heat flow map of the United States. SMU's 2004 geothermal map of North America was based on limited data in the northeastern and mid-Atlantic regions of the country. Consequently, the 2004 treatment was unable to characterize potential geothermal resources in these regions with the same accuracy or fidelity as was possible in the midwestern and western regions of the U.S. (Blackwell and Richards, 2004). With the use of recently acquired oil and gas well-log data from many eastern states, it is now possible to develop a refined map of heat flow that can be used to identify areas with the potential for development of EGS.

The initial assessment presented here examines the states of New York and Pennsylvania with the intent of future expansion into the New England region. Well-log data consisting of bottom-hole temperatures (BHTs) and vertical depth measurements from the two states were assembled and then corrected to account for drilling-induced errors in the temperature measurements (discussed in further detail below). A spatially variable (in both depth and surface extent) model of subsurface thermal conductivity was constructed based on the AAPG COSUNA (Correlation of Stratigraphic Units of North America) publication for the Northern Appalachian Basin (Orlo, 1985). The modeled thermal conductivity and corrected thermal gradients were then used to produce comprehensive maps of heat flow at the surface and temperature at depth, using methods as described by Stutz et al. (2012).

2.1 Methods

2.1.1 Data Collection

Well data in the form of archived oil and gas well logs were collected from SMU, the Pennsylvania Geological Survey, the New York State Geological Survey (part of the New York State Museum), and the New York State Department of Environmental Conservation (NYSDEC, 2011). The total collection was limited to include only wells with BHT measurements taken at depths greater than 600 meters, thereby minimizing the effects of groundwater movement and near-surface temperature variations on thermal gradient calculations. This depth cutoff was applied by Frone (2010) and has been used to maintain consistency across datasets for the compilation of a final heat flow map by SMU and Cornell. The resulting dataset contained a total of 7938 data points - 4179 in New York and 3,741 in Pennsylvania. Due to the spatially-variable nature of oil and gas deposits (and thus oil and gas drilling), the BHT data points in this dataset are not spatially homogeneous. Rather, they are confined to the Appalachian basin region covering southwestern New York and northern and western Pennsylvania. The data is often clustered together in certain areas where oil and gas drilling are more prevalent, such as west-central Pennsylvania in the deepest parts of the Appalachian Basin. No new data points have been identified in northeastern New York and southeastern Pennsylvania.

2.1.2 BHT Corrections

BHT data is commonly of poor quality and often the exact conditions leading up to and at the time of measurement are not well documented. Additionally, BHT points are taken from open-hole well logs where near field temperatures will have been significantly disturbed due to the circulation of large quantities of drilling mud utilized in the drilling process. As such, the true “equilibrated” BHT measurements are not obtained. This inherent error must be removed by calibration with oil and gas wells of similar depth that are at thermal equilibrium in order to calculate representative geothermal gradients and surface heat flow. The most mathematically robust, and therefore commonly regarded as most accurate, correction utilizes a Horner plot as originally proposed by Bullard (1947). However, this correction method requires multiple temperature readings through time following cessation of well drilling—a practice that is seldom applied in the oil and gas industry—and thus cannot be applied to wells with a single BHT measurement (Demming, 1989).

As a practical alternative to Horner plots, purely empirical BHT corrections are often developed and applied within a field or geological basin. Within a single field or basin, most wells will be drilled in a very similar fashion, through similar geological units, and to similar depths. As a result, they will have experienced comparable magnitudes of deviation from thermal equilibrium. The majority of empirical corrections attempt to estimate this deviation as a function of depth. For example, in the AAPG Geothermal Survey of North America, Kehle (1972) proposed that a 3rd order polynomial could be fit to the difference between measured BHT temperature and equilibrium temperature. This resulted in an equation similar to Equation 2.1, where ΔT is the difference between equilibrium temperature and the observed temperature on a geophysical log at depth z.

$$\Delta T = a + bz + cz^2 + dz^3 \tag{2.1}$$

The correlation coefficients a, b, c, and d can be fitted empirically by least squares regression given data within any specific region.

Similarly, Harrison et al. (1983) proposed a second order polynomial, based on data from the state of Oklahoma. The simplified form of this correction can be seen in Equation 2.2, where ΔT is in °C and depth (z) is in meters.

$$\Delta T = -16.51 + (0.018 \cdot z) - (2.34 \cdot 10^{-6} \cdot z^2) \tag{2.2}$$

The ΔT value is a correction factor that can be added to the BHT from a geophysical log header to yield a corrected equilibrium temperature.

The Harrison correction was successfully applied in basin analysis studies of the Anadarko Basin in Oklahoma (Gallardo and Blackwell, 1999). Additionally, by incorporating the work of H. C. Spicer (1964), which provided a set of equilibrium data wells in multiple states, the Harrison equation (1983) has been shown to provide a suitable correction in many other areas, including the Northeastern U.S. Frone et al. (2011), for example, applied this correction to New York, Pennsylvania, and West Virginia with reasonably accurate results. Thus, based on the nature of this dataset and other factors, the Harrison correction was selected as the most practical and feasible correction for the analysis presented here.

The resulting BHTs were plotted against fourteen thermally equilibrated Spicer wells in New York and Pennsylvania, the majority of which extended to depths of 1500 to 2000 meters. As shown in Figure 2.1, it was found that the Harrison correction adequately adjusted BHTs for wells in excess of 1000 meters. However, for wells shallower than 1000 meters, uncorrected values were more likely to be representative of thermal equilibrium. Given that the Harrison correction is an empirical correlation based in Oklahoma, it accounts for warm mud that has been stored at the surface in the hot sun before being circulated downhole, effectively warming, rather than cooling, the upper parts of the wellbore closest to the surface. Average drilling mud temperatures at the surface in NY and PA will be much lower than those in Oklahoma while being stored at surface prior to, and during, initial down-hole circulation, thus diminishing the need for correction at shallow depths.

2.1.3 Thermal Gradient Calculations

The Harrison-corrected BHT values, measurement depth, and average annual surface temperature of the region were used to calculate an average thermal gradient (*dT/dz*) at the location of each data point. Equation 2.3 defines the geothermal gradient in terms of the corrected bottom-hole-temperature in °C (T_{BHT}), the average annual surface temperature in °C (T_S), and the vertical depth in kilometers (z).

$$\left(\frac{dT}{dz}\right) = \frac{T_{BHT} - T_S}{z} \tag{2.3}$$

The vertical depth was assumed to be the lesser of either the logging depth, as measured by the well-logger, or the true vertical depth (TVD), as reported by the driller. The value of T_S was estimated to be 9°C. In the case of duplicate well entries (due to logging of the

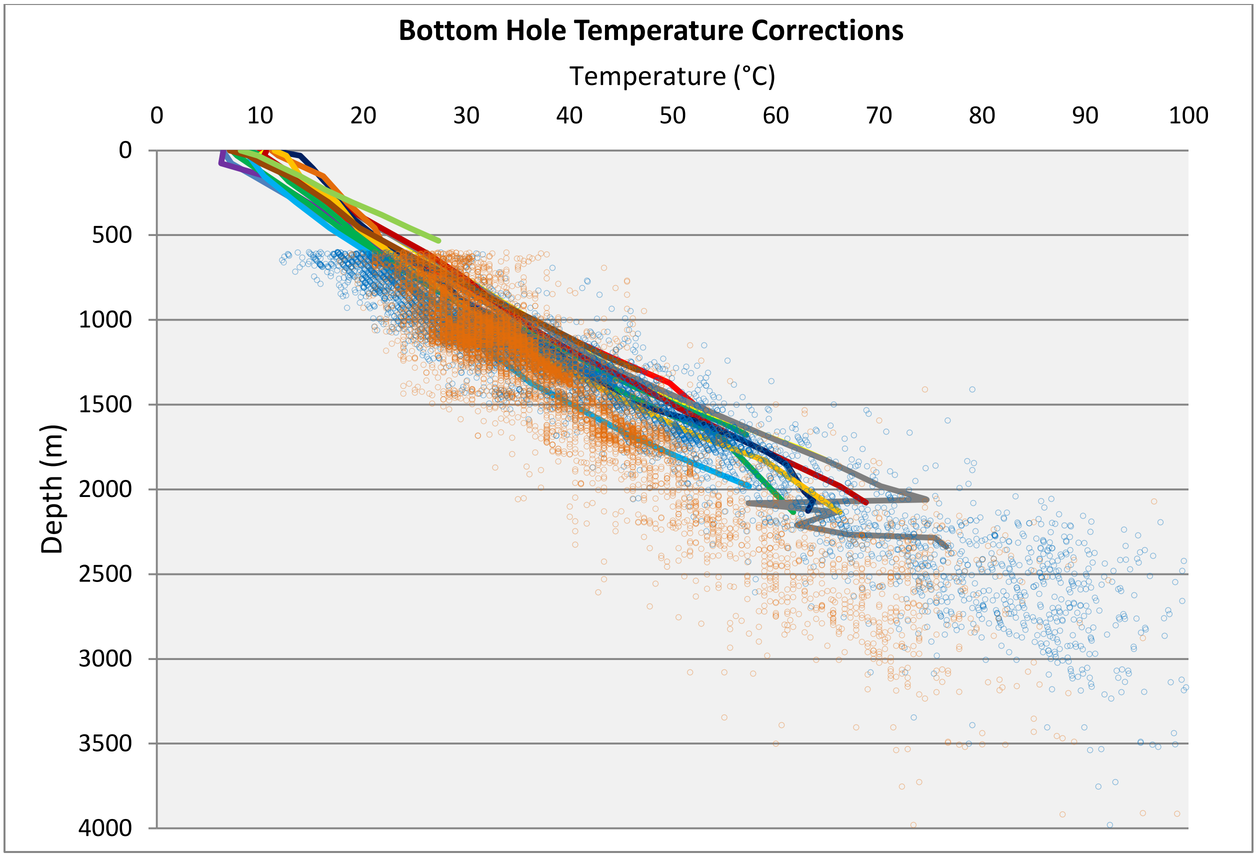


Figure 2.1 Temperature measurements from 14 equilibrated wells (colored lines) are compared to Harrison-corrected (blue) and uncorrected (orange) bottom hole temperatures (data sources: SMU; PA Geological Survey; NYS Museum; NYSDEC, 2011). The applied Harrison correction is viable for depths greater than 1000 m. Data points shallower than 600 m and deeper than 3000 m were not included in the figure due to near-surface temperature variations and sizing of the chart, respectively.

same well at different depths), the gradients were averaged based on the simplification that, below the domain of fresh water aquifers, the temperature gradient is constant with depth for a given location.

2.1.4 Heat Flow Calculations

Surface heat flow at a given location was calculated as the product of the thermal gradient and the average rock thermal conductivity value (*k*) to the depth of the BHT measurement, as shown by Equation 2.4.

$$Q_s = k \left(\frac{dT}{dz}\right) \tag{2.4}$$

At each individual well location, the thermal conductivity values of the underlying geologic formations were calculated as a weighted average based on their thicknesses. The formation lithologies and thicknesses were derived from the AAPG Northern Appalachian COSUNA (Correlation of Stratigraphic Units of North America) cross section (Orlo, 1985). COSUNA defines a generalized stratigraphic column containing the formation names, range of unit thicknesses, and primary lithology for a set of regions, with the regions consisting of multiple counties. This information was digitized and supplemented with additional lithologic descriptions from the USGS. Using a previous compilation of lithology-specific thermal conductivities by Beardsmore and Cull (2001), which included the mean values from eleven different studies, the thermal conductivities of each rock type were averaged and assigned to individual formations within the COSUNA sections.

In order to better represent the conductivity at a specific location, it was necessary to refine the total sedimentary thicknesses shown on the large-scale COSUNA sections. The area of study is located in the northern Appalachian Basin with sedimentary thicknesses ranging from 0 to 10 km, increasing steadily to the southeast and reaching maximum thicknesses along the western edge of the Appalachian Mountain range. A map of the sedimentary thickness from the AAPG Basement of North America (1978) was used to generate a 3D surface representing depth to basement rock over the aerial extent of the wells (Figure 2.2). Appropriate corrections were also made to account for the Rome Trough irregularity in southeastern Pennsylvania as was described by Shope (2012).

Given the location of an individual well, the 3D surface interpolated the depth to the basement and the resulting value was applied as a scaling factor to the overall thickness of the COSUNA cross-section. The average thermal conductivity to a given well depth was then calculated using the procedure described by Stutz et al. (2012).

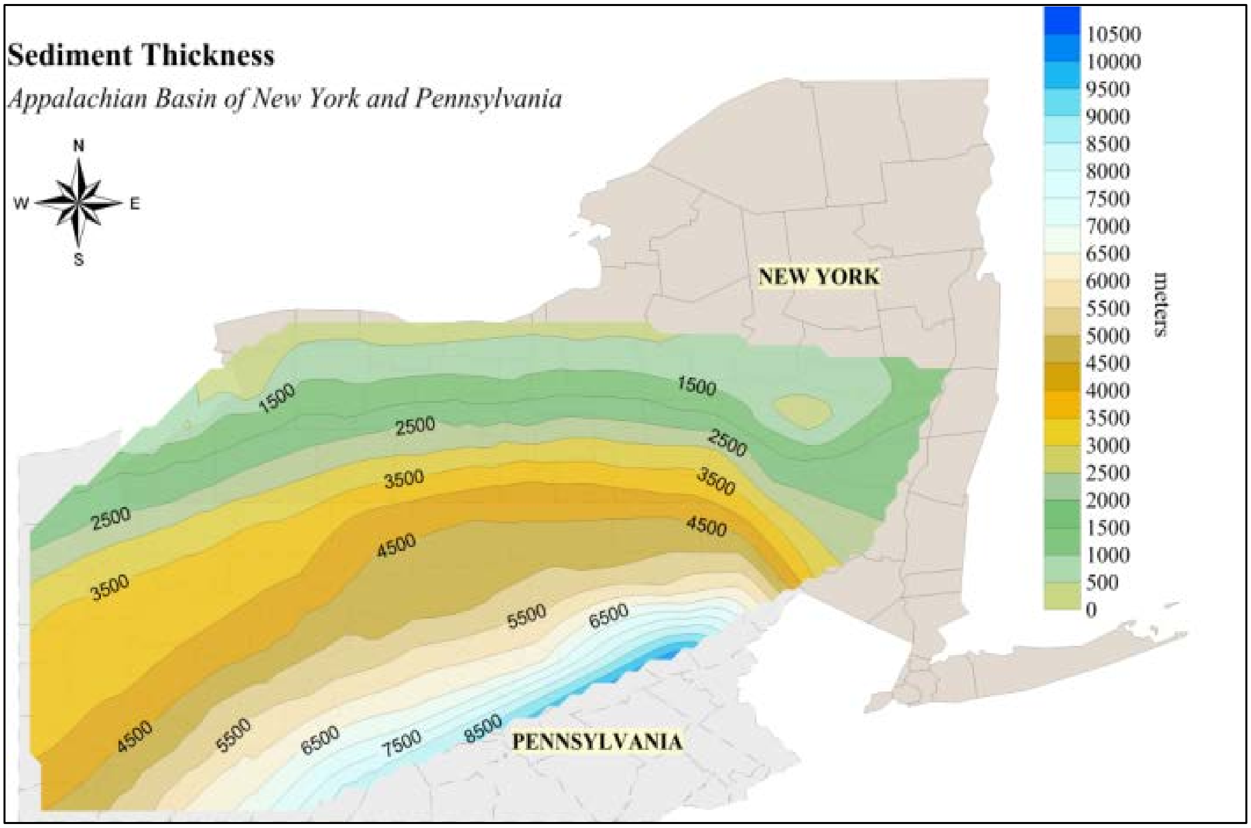


Figure 2.2 The thickness of the sedimentary units within the Appalachian Basin of New York and Pennsylvania, representing the depth from the surface to the underlying basement rock, from AAPG (1978). From this map, the sedimentary thickness at a given well location was predicted.

2.1.5 Temperature at Depth Calculations

The thermal model developed by Stutz et al. (2012) was used to calculate the anticipated temperature as a function of depth. Several assumptions were used in the model as deemed appropriate for the Appalachian basin of NY and PA. Based on the work of Blackwell, Negraru, and Richards (2007), the thermal conductivity of rocks will approach a constant value at depth with increasing temperature and pressure. Therefore below a depth of 4 km, a value of 2.7 W/m/K was used regardless of lithology (Birch and Clark, 1940; Sibbit, Dodson, and Tester, 1979; Clauser and Huenges, 1995). It was also assumed that mantle heat flow could be estimated as 30 mW/m^2 over the entire area and that the sedimentary strata could be modeled as a uniform radiogenic layer producing 1.0 µW/m^3 – typical average values for areas of continental crust such as the Appalachian basin (Birch, Roy and Decker, 1968; Allen and Allen, 2005; Blackwell, Negraru, and Richards, 2007). The radiogenic contribution of the basement (A_b) was then calculated using these assumptions and Equation 2.5.

$$A_b = \frac{Q_s - Q_m - A_s z_s}{b} \qquad (2.5)$$

Q_s and Q_m are sedimentary and mantle heat flow (respectively), A_s is the radiogenic contribution of the sediments, z_s is the thickness of the sediments, and b is the characteristic thickness of the basement (that which produces a meaningful level of radiogenic heat).

Any well temperature that resulted in a lower heat flow than what would be expected from the mantle heat flow and the sediment radiogenic contribution was neglected. Based on the assumptions described, it would be possible to have a negative A_b value returned. It was assumed that convective flow or some other force was removing heat from this location, or that the assumption of 1.0 $\mu W/m^3$ radiogenic contribution from the sediments was too high in that particular location. However, without more detailed information it was not possible to determine the exact nature of the error. As this situation affected a very small proportion of wells (approximately 2.5%), data from those wells were disregarded. We intend to evaluate wells in this category in greater detail in future research in an effort to glean more information regarding basin-wide, as well as more localized, processes. The remaining wells used in this analysis were then thermally modeled to estimate temperature at depth.

2.1.6 Mapping Techniques

Contour maps of the calculated geothermal gradient, heat flow, and isothermal depths were produced using ArcGIS Desktop 10 produced by ESRI. The Natural Neighbor gridding method, suited for datasets of irregular data density, was used to interpolate values between data points and account for the spatial irregularity of the data throughout New York and Pennsylvania. Grid values were not extrapolated beyond the spatial extent of the data—areas lacking data points were left blank to avoid misrepresentation, as seen in the southeastern region of Pennsylvania and the eastern and northeastern regions of New York in Figure 2.3.

2.2 Results and Discussion

Figures 2.4 and 2.5 show the calculated geothermal gradient and surface heat flow, respectively. The average thermal gradient of the entire dataset (using Harrison-corrected BHTs) is 23.98 °C/km with an average surface heat flow of 51.67 mW/m^2. The spatial averages of the gradient and heat flow, calculated within ArcGIS as the raster average, are 24.15 °C/km and 56.13 mW/m^2, respectively. This difference is due to differences in the data density across the map. All averages agree well with conventionally-accepted average continental values of 25°C/km and 50 mW/m^2. Comparison of the new heat flow map (Figure 2.4) with the 2004 heat flow map produced by Blackwell et al. (Figure 2.5) illustrates the degree to which spatial resolution of the geothermal resource has been increased.

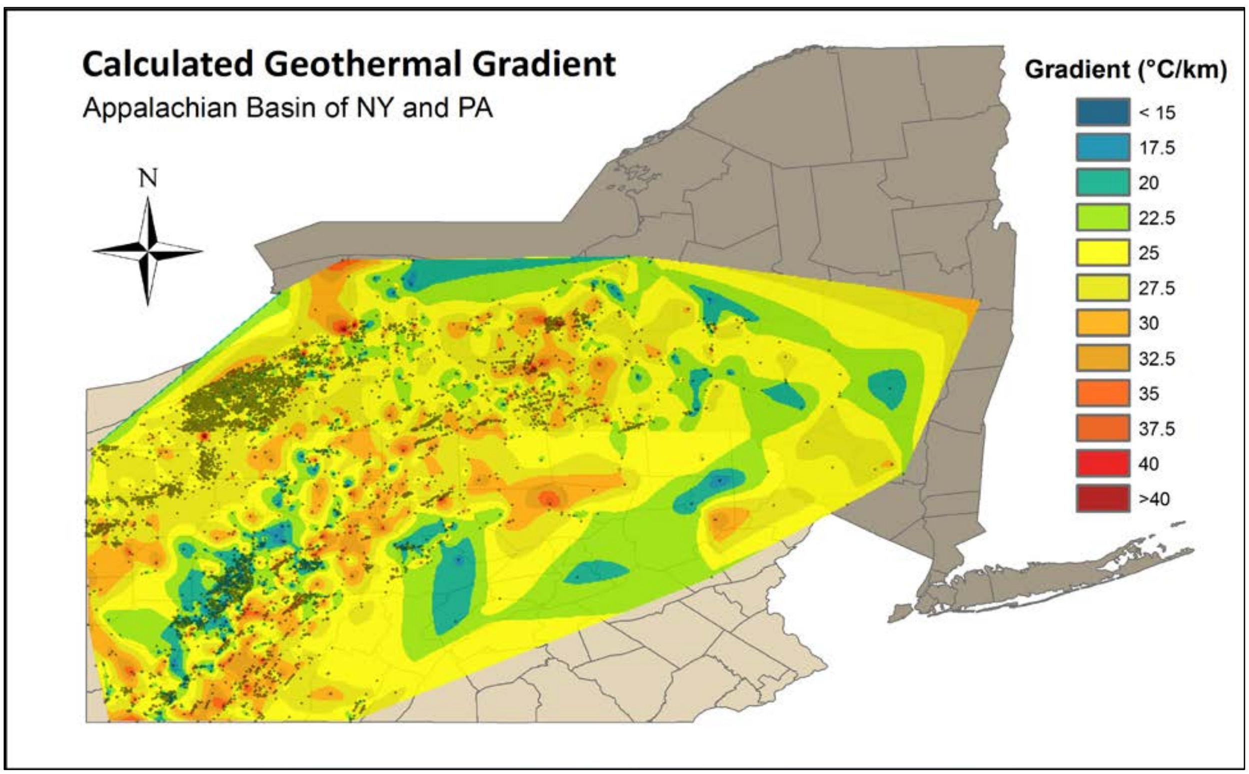


Figure 2.3 Projected geothermal gradients within the Appalachian Basin region of New York and Pennsylvania. Black points are locations of individual well data points whose bottom hole temperature and depth measurement comprise the primary dataset (data sources: SMU; PA Geological Survey; NYS Museum; NYSDEC, 2011).

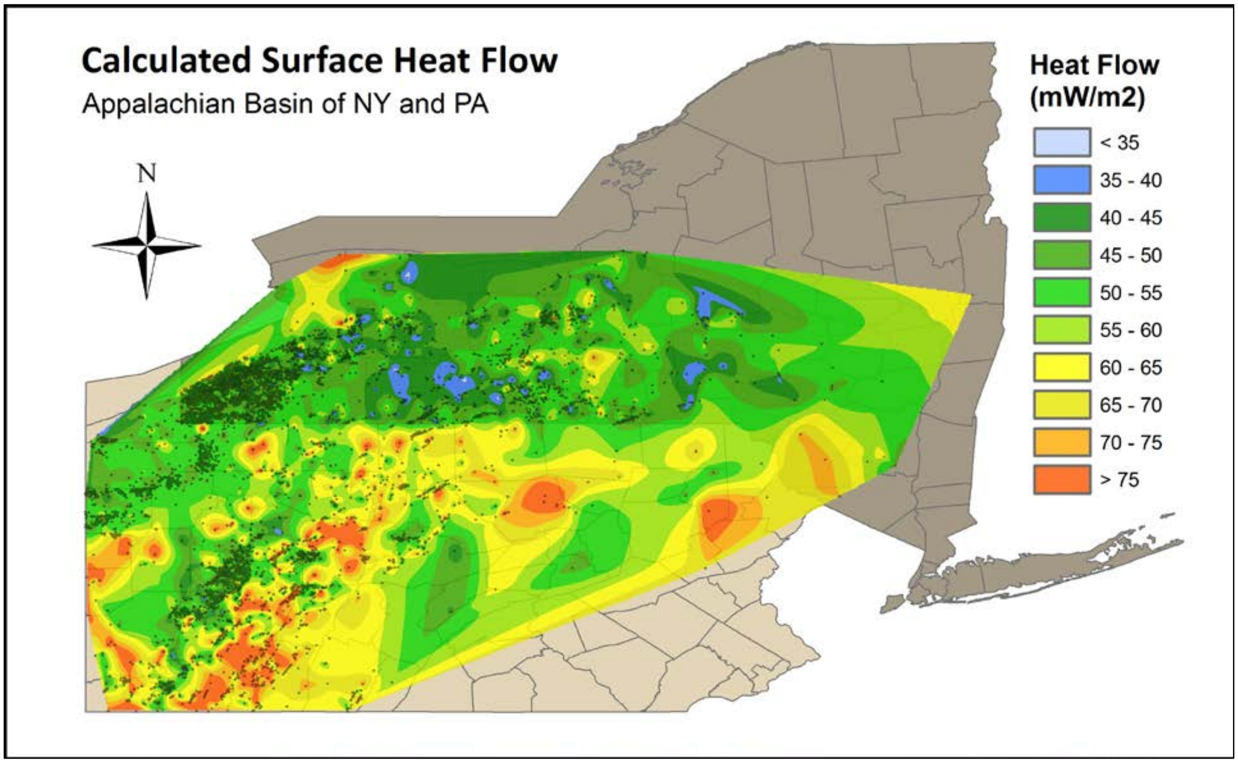


Figure 2.4 Surface heat flow in the Appalachian Basin region of New York and Pennsylvania, calculated as the product of thermal gradient and average thermal conductivity at each well data point, which are represented by the black crosses (data sources: SMU; PA Geological Survey; NYS Museum; NYSDEC, 2011)

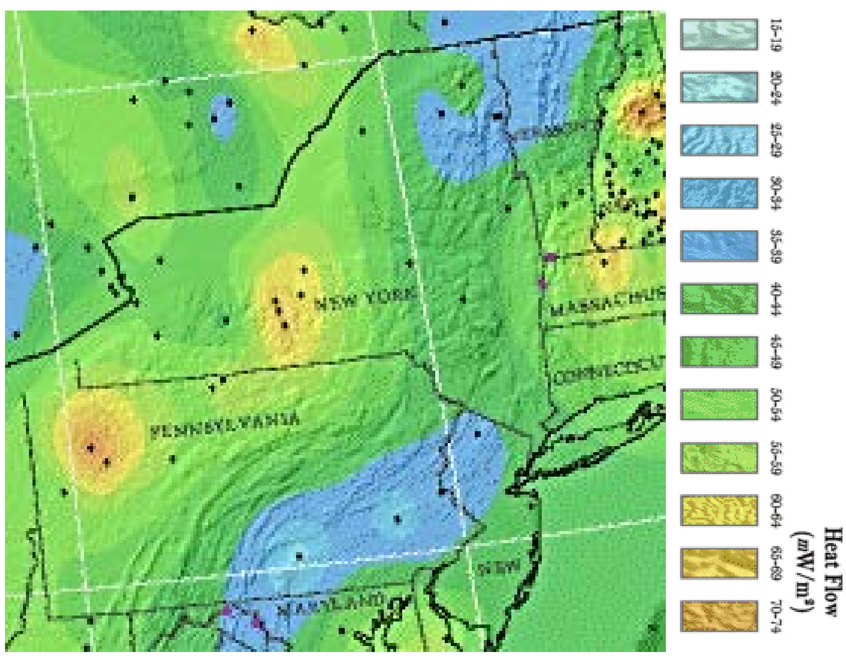
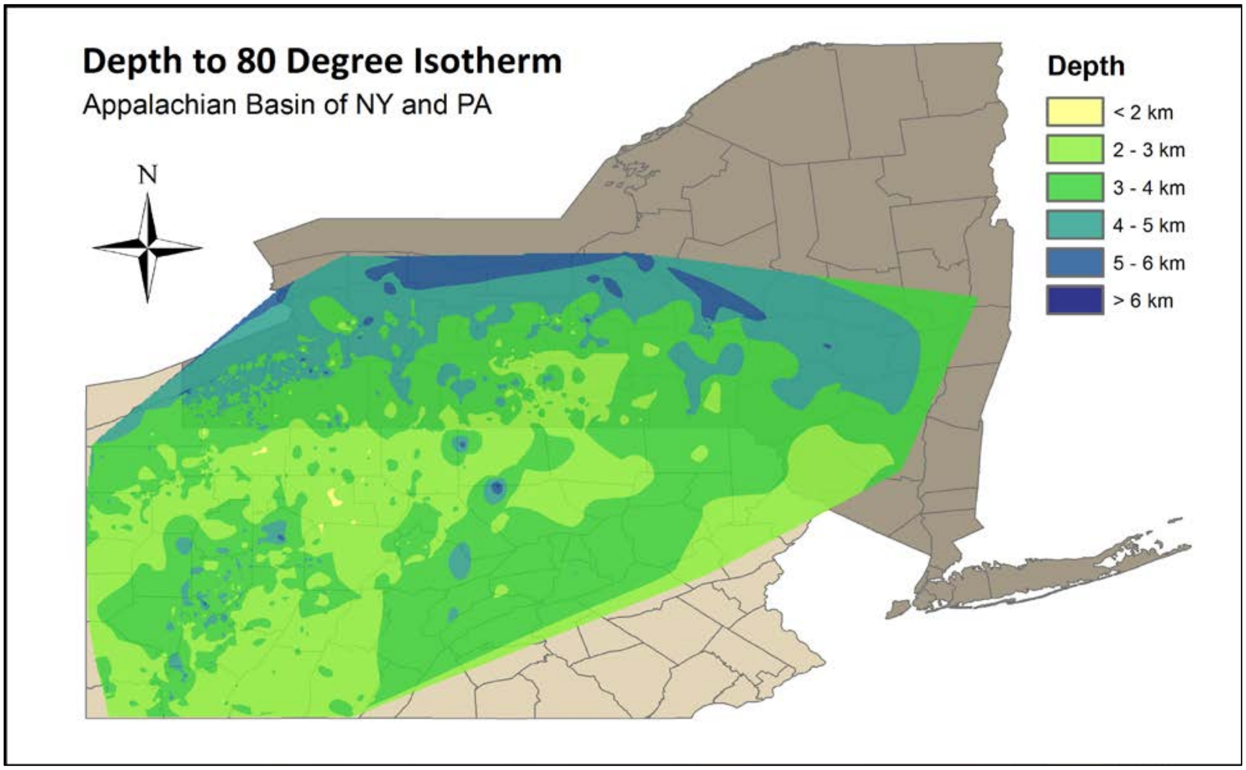


Figure 2.5 Limited data in the Appalachian Basin of New York and Pennsylvania as shown by the earlier SMU map (Blackwell, 2004). An increased number of data points have increased the understanding of heat flow distribution in the region.

Isothermal contour maps resulting from the methodology described in Stutz et al. (2012) show the projected depths at which temperatures of 80°C (Figure 2.6) and 120°C (Figure 2.7) can be reached. Temperatures of 80°C, the target for a typical direct-use district heating system, are accessible over much of Figure 2.6 at depths shallower than 3 km, and everywhere at depths shallower than 6 km (often considered the economically viable drilling depth). It is therefore within reason to state that the assessed area shows great potential for deployment of geothermal district heating. Throughout a majority of the mapped area in Figure 2.7, the temperatures typically required for electric power generation (>120°C) are found at depths greater than 6 km, though in some areas this temperature can be found as shallow as 3 km. While these depths are accessible with current technology they will be very challenging to produce and develop economically at today's electricity prices. Co-generation of electricity and heat would be much more attractive both economically and from a sustainability perspective for these lower grade resources (Tester et al., 2010).

By increasing spatial resolution over previous geothermal resource maps of the Appalachian Basin, several localized "hot spots" can now be identified. In some cases, temperatures that may be capable of producing electric power are projected at depths as shallow as 3 km (Figure 2.7). Most of these hotspots appear to trend along a northeasterly axis following the eastern edge of the Appalachian Plateau, just west of the Appalachian valley and ridge region. This is likely a result of the "thermal blanketing" effect of the deep sedimentary layers found in this region. The "hot spots" are defined by heat flows 20 mW/m^2 or more above the regional average and are constrained by nearby data points. The surface area of each is approximated to be on the order of tens of square kilometers in size. These anomalies warrant a more spatially resolved analysis to better define their potential for EGS development.

There is an inherent level of uncertainty associated with producing gradient and heat flow maps such as those presented here. Apart from the uncertainty associated with the temperature measurements themselves and their corrections, data density is also of primary concern. BHT data points are most concentrated in areas of heavy oil and gas drilling. As a result there is a highly variable spatial distribution of data points across the study area, ranging from 1 data point in several counties (i.e. Carbon, Fulton, Juniata, Mifflin, Northumberland,



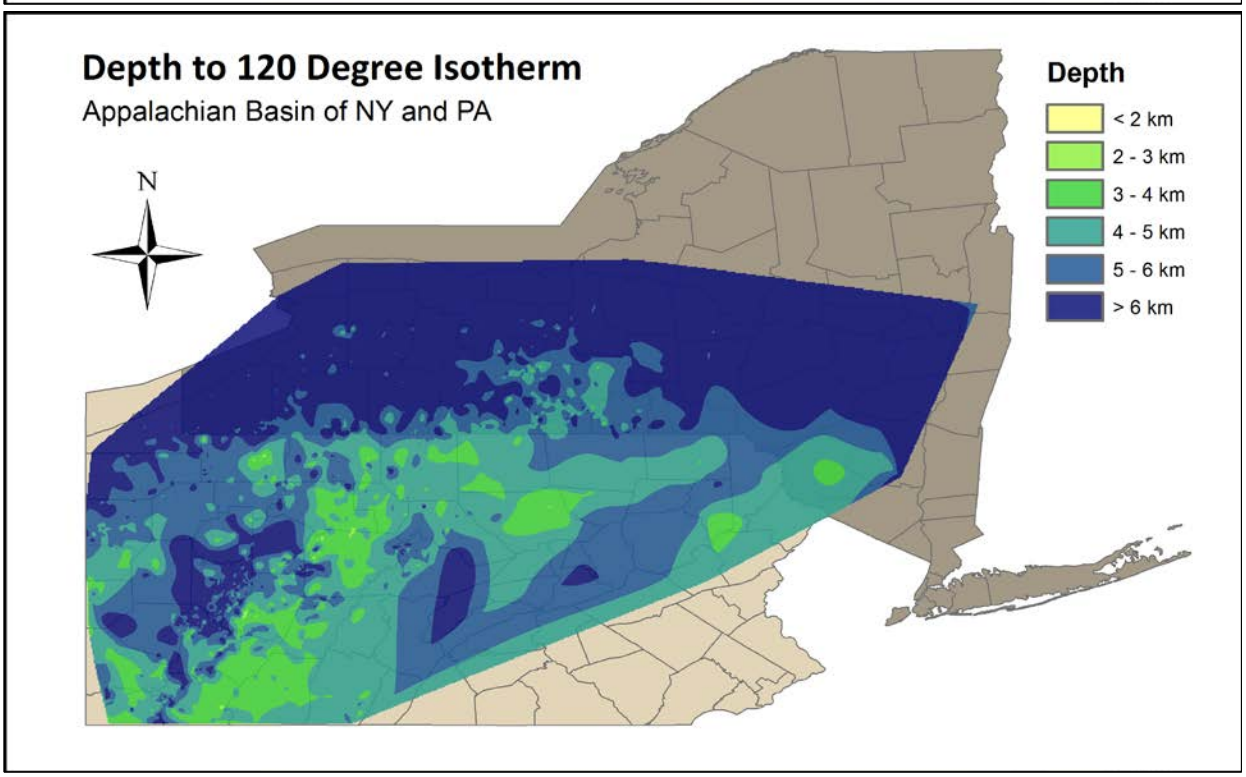


Figure 2.6 (above) Isothermal map of depths at which 80°C temperatures are predicted to exist. This temperature is suitable for district heating and many direct-use applications.

Figure 2.7 (below) The same map with depth to 120°C isotherm. This temperature is considered to be the minimum at which electricity production might be possible.

Orange, Pike, Schoharie and Susquehanna) to 2213 data points in Chautauqua County, New York. The interpolation method used to create each map ("natural neighbor") was selected because of its suitability for data sets with a highly variable density and clustered scatter points (Childs 2004). The exact weight given to each data point and its leverage on the overall contouring, however, is uncertain. Anomalies contained completely within the interior of the study area are, therefore, slightly more reliable than those transected by the outer boundary. Hot spot anomalies in areas of dense data are also more reliable than those represented by only one or two data points, and are deserving of future geochemical, geophysical, and drilling investigations.

2.3 Conclusion

The recent availability of well log data and the development of improved methods for heat flow calculations (as described by Stutz et al., 2012) have enabled an efficient, updated assessment of the geothermal resources in the Appalachian Basin region of New York and Pennsylvania. Temperature-at-depth maps indicate that direct-use and district heating applications utilizing these lower grade geothermal resources are possible throughout the entire study area, while suitable temperatures for electricity generation can be found across much of central and southwestern Pennsylvania and parts of south-central New York. Co-generation and combined heat and power applications would be especially attractive in these areas as they significantly improve the overall energy utilization from EGS and thus increase the financial viability of the EGS project.

Future improvements of the maps and methods presented in this chapter include supplementing areas of sparse data, developing a BHT correction specific to the NY and PA region, and obtaining additional equilibrated temperature data for calibration, as well as expanding the boundaries of the current study into surrounding states. As a product of achieving the goal of increased spatial resolution of the geothermal resources within the Appalachian Basin of New York and Pennsylvania, a number of isolated "hot spots" have emerged. The next step is to ascertain the credibility and geologic nature of these anomalies to determine their potential for EGS development.

Chapter 3

Regional District Heating Modeling and Supply Curve Development

Now that a newly refined geothermal resource map for the Appalachian Basin of New York and Pennsylvania has been developed, as documented in Chapter 2, the next step is to further explore opportunities for development of Enhanced Geothermal Systems (EGS) in the region. The remainder of this thesis will focus exclusively on geothermal district heating (GDH), as it was determined in Chapter 2 that direct-use and district heating applications were likely the most appropriate given the geothermal resources available in New York and Pennsylvania.

In order to better characterize and evaluate EGS opportunities in the region, a supply curve will be developed. Such a curve will be able to show the estimated cumulative heating capacity that could be sold at or below a given price by plotting the total cumulative heating capacity in the study region against the projected levelized cost of supplying that heat, with the least-cost capacity plotted first followed by successively higher cost capacity. This will help identify GDH opportunities in two ways: (1) by highlighting specific locations where EGS GDH would be most affordable relative to the rest of the study area and (2) by providing a tool to easily visualize and compare where potential for cost-reduction might be greatest for GDH development in the region.

3.1 Background

The U.S. Department of Energy and other organizations have been using supply curve analysis to evaluate renewable energy technologies for decades. Recently, the National Renewable Energy Lab (NREL) published a supply curve for geothermal electricity production in the United States (Augustine et al. 2010; Augustine 2011). However, that study evaluated geothermal electricity production exclusively while neglecting geothermal direct-use and district heating possibilities. This leaves an opportunity for development of a supply curve exclusively for district heating applications, of which there have been very few, if any, attempts to do. The overall framework of the supply curve developed here will be loosely based on the framework employed by NREL to develop their geothermal electricity supply curve.

According to NREL the two primary steps in developing a supply curve involve estimating the resource potential and determining the cost of developing that resource (Augustine et al. 2010). However, developing a supply curve for geothermal district heating requires one additional step that is not necessary for a geothermal electricity supply curve: assessing the heating demand for each specific GDH network. This is necessary due to the location-dependent nature of geothermal district heating. In geothermal electricity production the assumption can be made that a resource may be developed anywhere and the power produced can simply be sold to the national power grid where there will be an essentially limitless demand for it. However, in geothermal district heating applications, the hot water produced can only be transported a few kilometers before it loses so much heat it becomes economically infeasible to transport it further. Heavily-insulated piping and high flow rates can increase the distance hot geofluid may be transported, but they also significantly increase the capital cost of the piping and the pumping costs, respectively. Additionally, much like electricity, hot geofluid cannot be stored in large quantities, meaning it must be produced and used on an as-needed basis. In fact, the EGS resource itself actually acts as the storage medium for heat prior to its extraction.

As a result, GDH systems can only be effectively developed where the resource also coincides spatially with an area that has a high heating demand that would ideally be constant throughout the year. Hence development of a geothermal district heating supply curve will have three primary steps: (1) assessment of the resources, (2) assessment of the demand, and (3) estimation of the cost to develop and operate the resource. The first step, resource assessment, was completed in Chapter 2. Chapter 3 will present the methods used to achieve the second and third steps. Estimated levelized cost of heat (LCOH) will serve as the final metric as it permits easy comparison of both locations and technology assumptions relative to one another. Figure 3.1 provides a modestly detailed schematic of the overall method and data processing workflow.

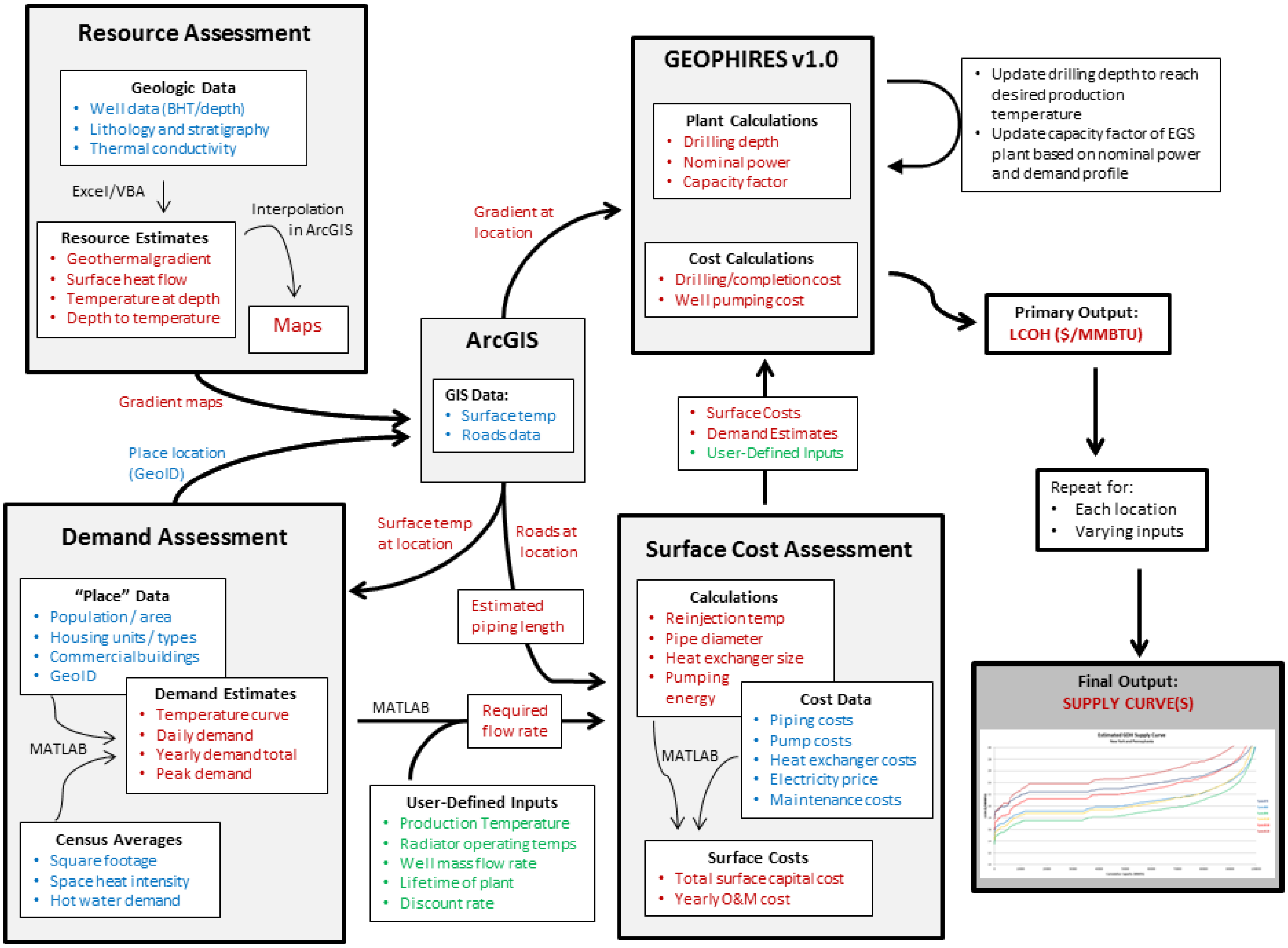


Figure 3.1 Overall workflow for data processing methods. Blue items represent inputs obtained from published data, green items represent inputs left to the user's discretion, and red items represent calculated and derived intermediates and outputs. A larger version of this figure is reproduced in the Appendix.

The NREL supply curve study began with the national geothermal resource base as estimated by the USGS 2008 Geothermal Resource Assessment and MIT's 2006 *The Future of Geothermal Energy* report (Williams et al. 2008; Tester et al. 2006; Augustine et al. 2010). The cost to develop this resource for electricity production was then evaluated using the Geothermal Electricity Technology Evaluation Model (GETEM), a Microsoft Excel-based tool maintained by the Department of Energy's Geothermal Technologies Program. GETEM accepts a series of user-defined inputs for a theoretical geothermal electricity plant and then outputs the levelized cost of electricity (LCOE) for that plant. To produce the NREL supply curve, a reference power plant was modeled by GETEM and then iterated repeatedly under different resource conditions and technology assumptions (Augustine et al. 2010).

This study will follow a similar path to the NREL report. It will begin with the geothermal resource assessment as previously presented in Chapter 2. To estimate the cost of developing this resource and the associated LCOH for district heating, this study will utilize a newly updated EGS modeling software package: "Geothermal Energy for Production of Electricity and Heat Economically Simulated," or GEOPHIRES for short. The original source-code for GEOPHIRES comes from an EGS modeling package developed at MIT in the late 1990's, which is described in Kitsou et al. (2000) (formerly known as MIT-EGS). This code was updated and adapted by students at Cornell University in 2012 to become the new GEOPHIRES model, for which a report appeared at the 2013 Stanford Geothermal Workshop (Beckers et al. 2013). The software, which operates with either user-defined or built-in inputs, will simulate a single EGS reservoir and plant and return an estimated LCOE or LCOH, depending on whether the user specified an electric generation or direct-use application. In this thesis, the direct-use (LCOH) option was always selected. Unfortunately, GEOPHIRES does not yet have the capability to model district-heating surface equipment such as heat exchangers, distribution networks, and distribution pumping costs, so those parameters had to be modeled upstream of GEOPHIRES and then fed into the software as a pre-defined input.

A shell interface was developed in the MATLAB programming environment to permit repeat iterations of the GEOPHIRES model with a single command. This MATLAB shell module is responsible for (1) reading all required inputs from an Excel input spreadsheet; (2) performing preliminary calculations including estimating temperature and demand profiles, reinjection temperatures, required mass flow rates, surface infrastructure equipment sizes and costs, and pumping costs; (3) executing the GEOPHIRES software package with the appropriate inputs and rerunning it if need be to ensure accurate results; (4) storing pertinent variables, including the GEOPHIRES output LCOH, and writing them to an output spreadsheet; and (5) iterating the entire workflow for each town, community or other "place" of interest in the study group.

3.2 Demand Assessment

3.2.1 "Places" Data

Because GDH systems can only be constructed in regions of moderate to high heating demand where people live, population centers first had to be identified. While New York and Pennsylvania certainly satisfy the heating demand requirement with 6116 and 5913 average heating degree days per year, respectively, identifying and locating population centers requires more effort. The U.S. Census Bureau maintains a GIS shapefile database under the name TIGER (Topologically Integrated Geographic Encoding and Referencing) that contains a wealth of information regarding populations, political boundaries, roads, and other information. The database information is available at several scales including state, county, county subdivision, and "place." The official Census Bureau designation of "place" is used to identify all individual cities, towns, villages, boroughs, universities, and other "census-designated places" (or CDP's, defined as "settled concentrations of population that are identifiable by name but are not legally incorporated") (Census Bureau 2012). The population and scope of a single "place" may vary from the whole of New York City proper, with a reported population of 8,175,133, to the smallest villages and CDP's with populations as low as 10. Because it is the official term of the U.S. Census Bureau and represents the smallest population unit for which census data is available, the "place" designation will be used throughout this thesis as the base unit representing population centers.

Data for New York and Pennsylvania from the 2011 release of the TIGER database were obtained and mapped in ArcGIS (Census Bureau 2011a). 2955 places, each identifiable with a unique "GeoID," were identified in the two states. After removing places with insufficient information (explained in the next section) the final dataset contained 2894 places that formed the base unit for which district heating plants were modeled and LCOH evaluated.

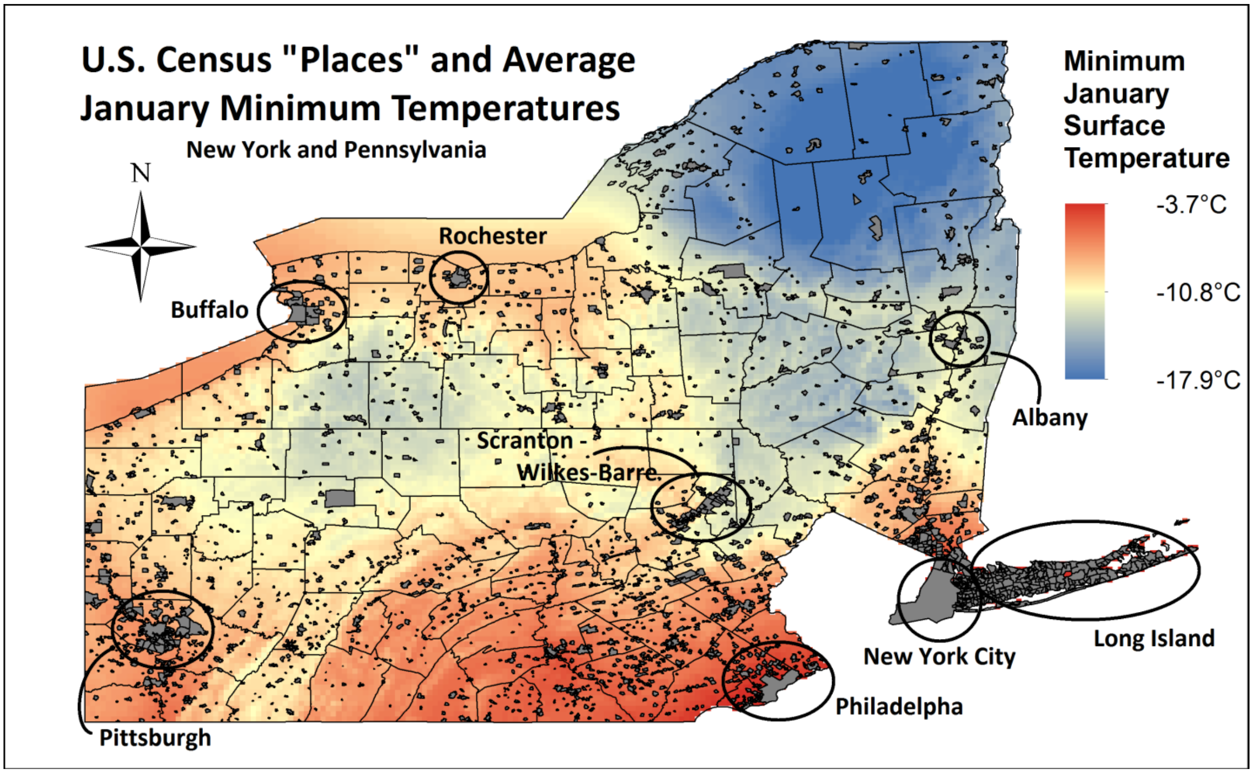


Figure 3.2 Locations of all 2955 U.S. Census Bureau "Places" (grey polygons) shown with the average minimum January surface temperature. Notice the concentrations of "places" around metropolitan areas such as Pittsburgh, Philadelphia, Buffalo, New York City, Rochester, Albany, Scranton – Wilkes-Barre, and Long Island.

3.2.2 Building Data

The energy consumption and heating load is not known for each place, so it had to be estimated from other available data. Data from the 2010 American Community Survey 5-year estimate on the total number of housing units and the number of housing units per residential building category (i.e. detached single-family, attached single-family, 2unit buildings, 3-4 unit buildings, 5-9 unit buildings, 10-19 unit buildings, 20-49 unit buildings, and 50+ unit buildings) were obtained for each place through the U.S. Census Bureau's American Fact Finder (Census Bureau 2011b). With this data, the number of residential buildings of a given size category could be estimated. Several places for which housing or commercial data did not exist were removed from the dataset. These included several small villages with fewer than 100 residents and some universities identified as CDP's by the Census Bureau.

In order to estimate the total residential heating load, residential floorspace for each "place" had to first be estimated. The Energy Information Agency (EIA) performs a Residential Energy Consumption Survey (RECS) every few years, the most recent of which was published in 2009. This survey contains, in addition to energy consumption data, statistical information on the average square footage of individual housing units by region and the size of the building to which the unit belongs (again, detached single-family, attached single-family, units in 2-unit buildings, etc.). These data were obtained for the Northeastern region, to which New York and Pennsylvania belong, and then used to estimate the residential floorspace for each "place" in the study area (EIA 2009).

Accurate data on commercial buildings proved more difficult to obtain. Different types of commercial establishment will have different energy requirements. For example, a restaurant will have a much different hot water and heating demand than say a theater or a warehouse. Data published by the 2007 Economic Census containing the number of commercial establishments by industry (Table 3.1) for "economic places" in the United States was obtained through American Fact Finder (Census Bureau 2011c). The designation of "economic place" however, does not coincide with the census definition of "place," creating a small disconnect. Rather an "economic place" corresponds to the census designation of "county subdivision," meaning the data had to be corrected. In many instances, "place" and "county subdivision" were the same and thus the Economic Census data could be used directly. However, in cases where a single "county subdivision" (i.e. "economic place") contained multiple "places" (typically around metropolitan areas) the data on commercial establishments for that county subdivision was divided amongst the "places" within that county subdivision based on the relative population of each "place." In this way a rough estimate of commercial establishments by industry type was obtained for every "place" in the dataset.

The EIA's Commercial Buildings Energy Consumption Survey (CBECS), the last release of which was in 2006, was used to estimate the total floorspace for each industry type for each "place." To ensure compatibility between the North American Industry Classification System (NAICS) used by the 2007 Economic Census and the "principal building activities" as designated by the CBECS, descriptions of each classification system had to be used to identify and assign the most suitable CBECS building activity for each NAICS classification, as seen in Table 3.1 (Census Bureau 2007; EIA 2012).

Table 3.1 Commercial activities as designated by the 2007 Economic Census in accordance with the North American Industry Classification System (NAICS); and the principal building activity to which each industry classification was assigned for use with the Commercial Building Energy Consumption Survey (CBECS).

Economic Census Industry Designation (NAICS)	CBECS Principal Building Activity
Accommodation and Food Service	Lodging; Food Service
Administration, Support, Waste, and Remediation	Office
Arts, Entertainment, and Recreation	Public Assembly
Educational Services	Education
Health Care and Social Assistance	Health Care
Information	Office
Manufacturing	N/A
Professional, Scientific, and Technical Services	Office
Real Estate and Rental and Leasing	Office
Retail Trade	Retail
Wholesale Trade	Retail
Other Services	Service
Residential (American Community Survey)	Residential (RECS)

CBECS data were obtained on the total number of commercial buildings in the mid-Atlantic region by both principal building activity and number of establishments in the building (EIA 2006). From these data the average number of establishments per building by industry type was determined.

A scaling factor for each “place” was calculated as the average residential housing units per building at that “place” divided by the overall average residential housing units per building for the entire dataset. This scaling factor was then used to scale the “place”-specific estimates for commercial establishments per building, based on the assumption that “places” with higher-density housing would also have a higher-density of commercial establishments. This operation yielded final estimates for the total number of commercial buildings of each industry type at each "place." Using the average floorspace of commercial buildings by principal building activity from CBECS, the estimated total commercial floorspace by principal building activity at each census "place" was finally determined.

3.2.3 Space and Water Heating Demand

Average space heating and hot water demand intensity (BTU/ft^2/year) were obtained for residential homes and commercial buildings (by principal activity) from the RECS and CBECS, respectively (Table 3.2) (EIA 2001; EIA 2006). For residential homes, data from the 2001 RECS had to be used because more recent RECS did not contain information specific to space and water heating in terms of energy per unit area. The energy intensities in Table 3.2 were then scaled to the mid-Atlantic based on the average intensity of the mid-Atlantic census region divided by the overall U.S. average intensity.

Table 3.2 Space heating and water heating energy intensities (in units of MBTU/ft^2/year) based on principal building activity. Commercial intensities are from the 2003 CBECS and the residential intensity is from the 2001 RECS.

Principal Building Activity	Space Heating (MBTU/ft^2/yr.)	Water Heating (MBTU/ft^2/yr.)
Education	39.4	5.8
Food Service	43.1	40.4
Health Care	70.4	30.2
Lodging	22.2	31.4
Retail	24.8	1.1
Office	32.8	2.0
Public Assembly	49.7	1.0
Service	35.9	1.0
Residential	25.7	8.0

In order to obtain a curve representing the demand profile throughout the year, a representative annual temperature curve first had to be derived. Data used included the mean annual temperature (T_{ave}), mean temperature in the coldest month of the year, January (T_{Jan}), and the average minimum temperature in January (T_{minJan}). The average instantaneous extreme minimum temperature (T_{absmin}), averaged over a 50-year period, was also obtained for each "place." These values were acquired as ESRI grid files from the WorldClim database (Hijmans et al. 2005) and then spatially matched to each census "place" from the TIGER shapefiles using ArcGIS. T_{ave} and T_{Jan} are then provided as inputs into the main MATLAB shell, which calculates a temperature curve for each census "place" according to the equation:

$$Temp(i) = T_{ave} + \left(T_{ave} - T_{Jan}\right) \cdot sin\left(2\pi\left(i - 112\right)/365\right) \qquad (3.1)$$

where i = 1:365 and represents each day of the year. The result is a sinusoidal temperature curve with a minimum on January 21 (day 21) at T_{Jan}, a maximum on July 22 (day 203), and an average annual temperature of T_{ave}. A 5-day cold-spell is then assumed (from January 18-22) based on the average minimum January temperature (T_{minJan}) at each "place" to account for below average cold periods. Figure 3.3 compares the calculated representative temperature curve to real 10-year daily temperature averages from the period 1995-2005 for three "places" in the dataset.

Daily temperature and energy use data for Cornell University was used as a reference case from which a linear relation for demand intensity (MBTU/ft^2/day) as a function of outdoor ambient air temperature was determined:

$$Demand = \left(-7.73 \cdot Temp + 162.4\right) \cdot sclSH/365 \qquad (3.2)$$

The sclSH term is a scaling factor calculated as the estimated overall average space heating intensity of the "place" in question divided by the average space heating intensity of Cornell University, for which equation 3.2 was initially formulated. To calculate the overall average space heating intensity of each "place," the published space heating intensity (Table 3.2, after

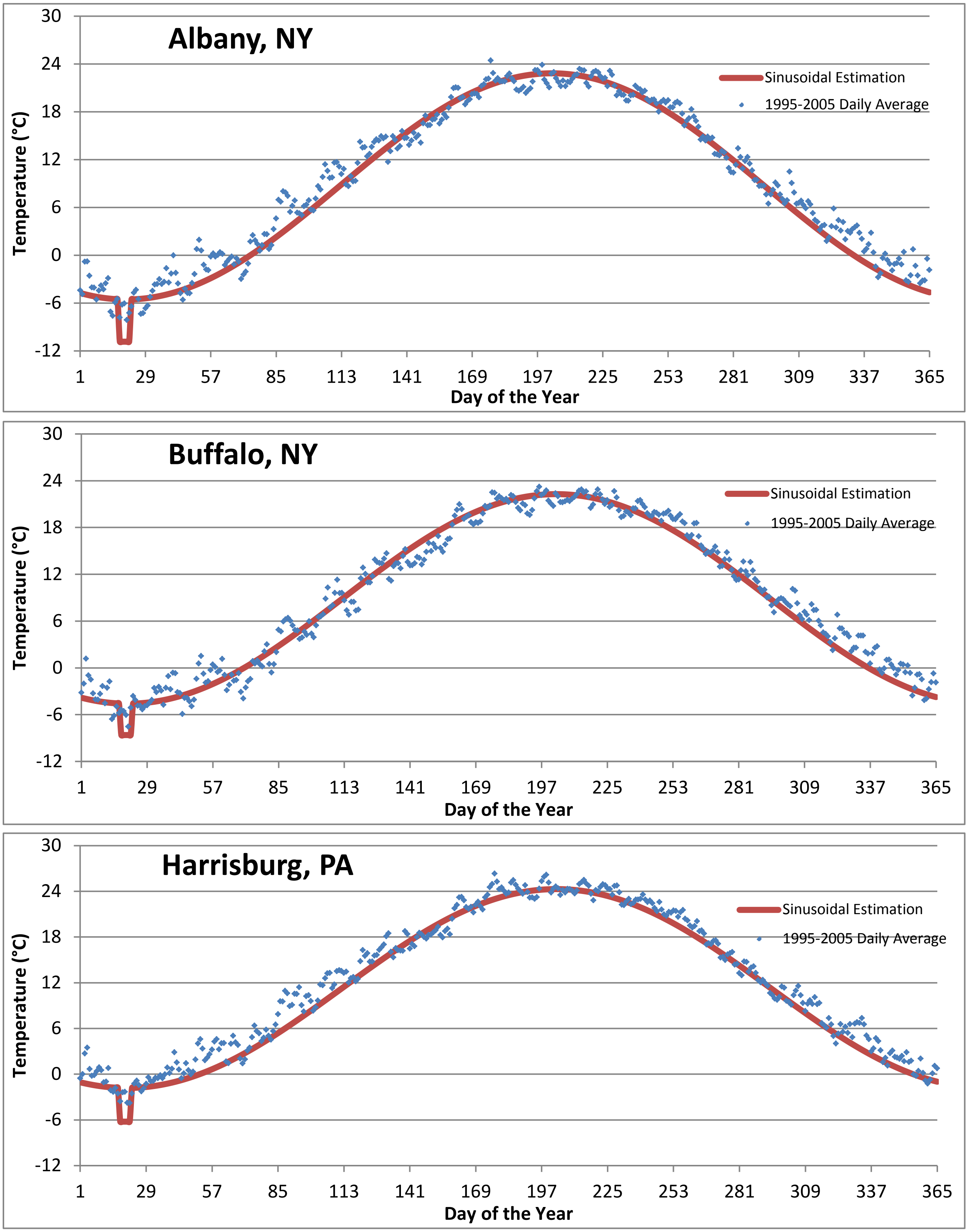


Figure 3.3 Sample sinusoidal temperature profiles generated with equation 1 compared to daily temperature data averages from the period 1995-2005.

being scaled to the mid-Atlantic) was multiplied by the estimated total floorspace of each building category (as determined in section 3.2.2) and then divided by the net total floorspace for the entire "place." Finally, the correlation in equation 3.2 estimates demand for each single day of the year by assuming that the entire year is spent at the outdoor air temperature of that day, resulting in units of BTU/ft^2/year (for each one of the 365 days of the year), meaning the entire result must then be divided by 365 to get to BTU/ft^2/day. Equation 3.2 is calibrated to an indoor temperature set-point of 21°C (70°F). In cases where the outdoor temperature was high enough that estimated demand was negative, demand was instead set to zero.

To obtain the total thermal demand for each day, water heating demand intensity was added to the space heating demand curve assuming hot water demand is constant throughout the year. The net result is an average daily thermal demand in MTBU/day for each day of the year. Average annual daily demand (MBTU/day), average maximum daily demand (MBTU/day), and total annual heat demand (MBTU/year) were then calculated over the year.

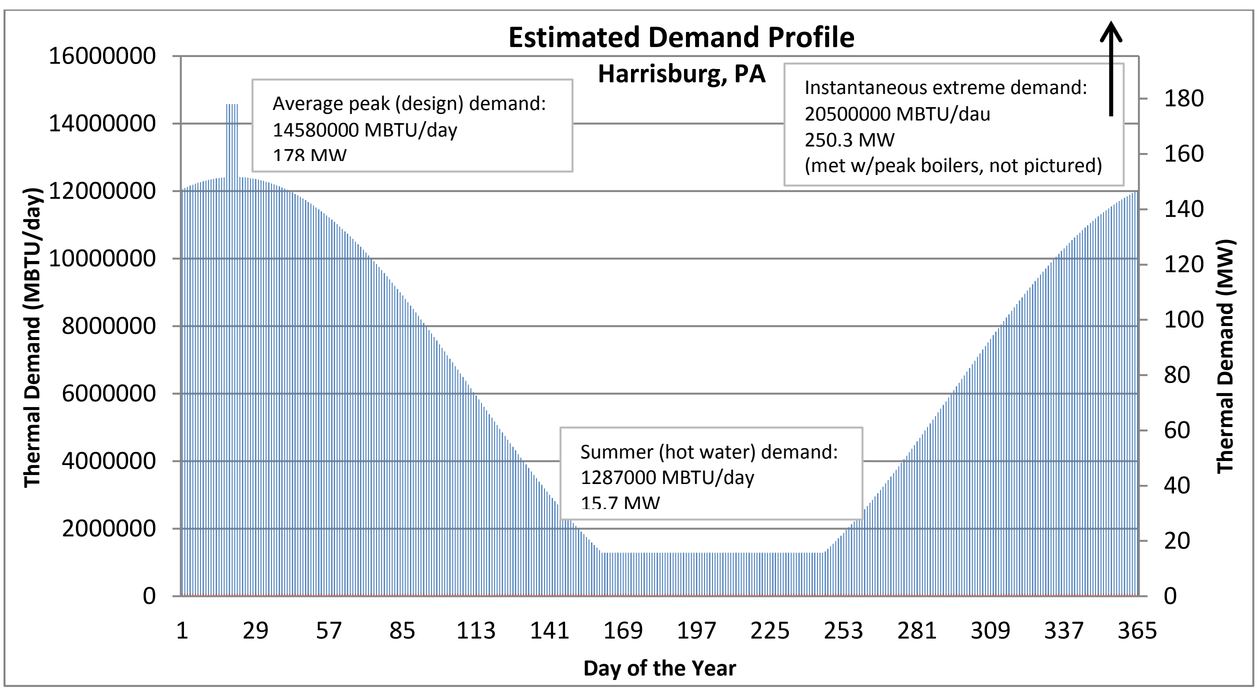


Figure 3.4 Example demand profile. Demand is predicted for each day of the year. GDH systems are designed to meet the average peak demand in January (based on T_{minJan}), leaving any instantaneous extremes (not pictured on profile but calcualted from T_{absmin}) to be met by peak boilers.

In addition, instantaneous absolute peak demand was estimated using the fifty-year average annual extreme minimum temperature (T_{absmin}) and equation 3.2. This peak demand was used when designing the GDH system capacity to estimate the instantaneous peak load that must be met with gas-fired peaking boilers. Each GDH system was designed assuming that all heat demand associated with the average minimum January temperature (T_{minJan}) would be met with geothermal heat (i.e. the "average peak demand"). Any excess demand associated with T_{absmin} (assumed to occur for 30 hours each year) would then be met with these peak boilers (i.e. the "instantaneous extreme demand").

A typical demand profile appears in Figure 3.4. Note that each demand curve is represented in MATLAB as a 365-element vector with each element representing the demand in MBTU/day for that day of the year. Each "place" then has a unique demand vector. Most of the ensuing calculations (i.e. temperatures, flow rates, pumping energy, etc.) were performed for each day of the year at each place using this 365-element vector format. Hence most of the equations that follow will use a simplified format to represent these annual vectors that are iterated at each "place." For example, fluid mass flow rate would appear simply as $[\underline{\dot{m}}]$ where:

$$[\underline{\dot{m}}] = [\dot{m}_1 \quad \ldots \quad \dot{m}_{365}]_k$$

where k = 1:2894, iterated for each "place" in the dataset.

3.3 Surface Equipment and Infrastructure

3.3.1 Distribution Network Length

To estimate the size and total length of distribution piping required to meet full demand at each "place," the total length of roads within each "place" was used as a proxy. As most existing water, sewer, and gas mains in the Unites States follow existing roads it is a fair assumption to assume that district heating mains will similarly follow existing roadways. This would be the simplest way to organize and install a DH network in the case of a community retrofit, and a brief review of the schematics for many existing DH networks reveals that this generally appears to be the case for most networks (e.g. Brown 2007; Zinko 2008; Skagestad & Mildenstein 2002).

Road shapefiles were obtained from the TIGER dataset for all roads in New York and Pennsylvania, excluding only the smallest local roads of less than 150m in total length, and mapped in ArcGIS. A "place" identity was then established for each road so that the total length of all roads within the boundaries of a single census "place" could be determined. The roads database was then split into 500-by-500 meter units and limits were applied so that a single unit square could not exceed a certain road density (total road distance per unit area). This limit was set at 10 km of road per square kilometer of land area. This was done to limit the effect of "places" with a high road density where DH piping would not need to be laid under every single road in town. Once the limits were applied, the total length of all roads in each "place" was summed. Finally, a variable "road coverage" proportion was applied to account for the use of intelligent piping routes that would negate the need to lay DH distribution piping under every single road in a given town.

With these factors, a total required DH piping network length could be estimated for each "place." Google Earth was used to estimate the road density in several towns, outline an estimated piping network, and estimate average distance of all buildings from the nearest DH main piping. The results for three locations are shown in Figure 3.5. For these cases it was determined that about 75% road coverage was sufficient and that around 7.0-7.5 km of DH piping per km^2 would be the maximum piping density required to reach all buildings. Hence for the base reference case road coverage was assumed to be 75% of all roads. This methodology yielded a maximum DH piping density for the base case of $(10km/km^2)\cdot75\% = 7.5\ km/km^2$.

From these Google Earth estimates the typical distance from the nearest DH main to a typical building was estimated and 35 meters was decided upon as a representative base-case value for the average branch distance (i.e. the length of small-diameter service pipe required to connect each building to the main distribution network). With this plan, a typical medium-density neighborhood would have main piping on every-other street with branch lines running from the main to the front of houses on the distribution street and from the main to the back of

Utica, NY: Total road: 15 km Estimated piping: 7.5 km Short service: 10 m Long service: 60 m Max service: 100 m Average service: 35 m	Dryden, NY: Total road: 6 km Estimated piping: 4.5 km Short service: 10 m Long service: 75 m Max service: 120 m Average service: 42.5 m	Brooklyn, New York City, NY: Total road: 18 km Estimated piping: 7 km Short service: 10 m Long service: 45 m Max service: 45 m Average service: 27.5 m

Figure 3.5 Three example district heating networks in New York State depicted using Google Earth (http://earth.google.com). The bold blue boxes each outline a 1km^2 area and the smaller yellow lines represent potential district heating network layouts. Also estimated are typical service distances from distribution main to buildings. "Short service" is the distance from the main to the front of buildings on the distribution street, "long service" is to the back of buildings on the off-street, and "max service" is the single longest required service distance in the example area.

houses off the distribution street. Typical main to front distance is about 10 m while typical main to back distance is about 45-75 m, resulting in an average of roughly 35 m.

3.3.2 Distribution Pipe Size

Required piping size was determined based on the maximum required flow rate, which was determined from the average maximum daily demand and the primary fluid supply (T_{ps}) and return (T_{pr}) temperatures. T_{ps} is provided as a user-defined input and T_{pr} is determined based on the radiator system design in the buildings (more detail in section 3.3.3). Once the maximum required flow rate is determined, required pipe size is calculated as:

$$D_{in} = 1.5197(\dot{m}_{max})^{0.427} \qquad (3.3)$$

where D_{in} is the interior pipe diameter in inches. This is then rounded up to the nearest 1" diameter. Equation 3.3 was created by fitting a curve to 14 experimental D_{in} to $\dot{m}_{max}$ relationships for $0.63" < D_{in} < 12.20"$, as published in the *Total Hydronic Balancing* handbook for heating and ventilation systems (Petitjean 2004). A linear extrapolation was then used to expand the equation to include diameters between 12 to 16 inches. The uncertainty in the published measurements themselves is quite small and the R-squared value for the final curve was a robust 0.997.

Required service line size was determined in the same manner using the estimated per-building peak heating demand rather than the average maximum daily demand for the entire census "place." Peak building heat demand was estimated for each building size (i.e. detached single-family, 2-4 units/building, 5-9 units/building, etc.) using equation 3.2, the instantaneous extreme annual minimum temperature, the average heating intensity of each "place," and the average unit size for each building category. The average peak building demand (by building size) was then obtained based on the number of units per building for each building category.

3.3.3 Heat Exchangers and Building Equipment

Primary Heat Exchanger Sizing Daily primary fluid mass flow rates and return temperatures (T_{pr}) were estimated using simple heat exchanger theory (e.g. see Lienau et al. 1998 Chapter 11). First, however, the primary heat exchanger size had to be determined. This was achieved by defining a set of user-defined design conditions for the system. For the initial base reference case, these design conditions can be found in Table 3.3. For building secondary heating systems (i.e. the radiator system) the operating temperature regime is often given as a ratio of $T_{ss,o}/T_{sr,o}$ where $T_{ss,o}$ is the secondary heating fluid supply temperature at design conditions and $T_{sr,o}$ is the secondary heating fluid return temperature at design conditions. For the initial base case a secondary fluid $T_{ss,o}/T_{sr,o}$ regime of 70/40°C (~158/104°F) setup was chosen based upon the assumption that although many current hot water radiators and forced-air heating systems are designed for an 80/60°C regime, evidence suggests they can operate at 70/40°C conditions with only a minor loss in performance (Ryan 1981; Myhren and Holmberg 2008; Lienau et al. 1998; Skagestad and Mildenstein2002). By choosing a 40°C secondary system return temperature ($T_{sr,o}$) hot water could then also be modeled together with space heating, as was done by Zinko et al. (2008), which vastly simplified ensuing flow and temperature calculations.

Required heat exchange area was determined assuming that each GDH plant would have a central heat exchanger facility to transfer heat from the primary to the secondary fluid, which would then be pumped directly to and through buildings' space heating systems (i.e. a 'centralized' system). This type of system would be much easier to maintain compared to an indirect system in which each building has its own heat exchanging substation. It is also simpler to model and typically more cost-effective.

Table 3.3 Design conditions during primary heat exchanger sizing for the initial base case. These conditions were assumed during the period of maximum daily demand. From this, the primary heat exchanger was sized and daily mass flow and T_{pr} vectors were calculated.

Design Parameter (abbr.)	Value	Description
Primary Supply Temp ($T_{ps,o}$)	75–125 °C (167-257 °F)	Geofluid production temperature
Secondary Supply Temp ($T_{ss,o}$)	70°C (158 °F)	Radiator supply temp
Secondary Return Temp ($T_{sr,o}$)	40 °C (104 °F)	Radiator return temp
Minimum Pinch Temp (T_{pinch})	3°C (5.4 °F)	Min ΔT between 1° and 2° fluid
Primary Return Temp ($T_{pr,o}$)	$T_{sr,o} + T_{pinch}$	Geofluid reinjection temperature
Primary Mass Flow Rate ($\dot{m}_{p,o}$)	30 kg/s (~475 gal/min)	Max wellhead production rate
Indoor Temp Set Point (T_i)	21 °C (70°F)	Desired indoor air temperature

The secondary fluid mass flow rate at design conditions ($\dot{m}_{s,o}$) was calculated using the basic steady-state energy balance:

$$Q = C_p\left(T_{ps,o}\text{-}T_{pr,o}\right)\dot{m}_{p,o} = C_p\left(T_{ss,o}\text{-}T_{sr,o}\right)\dot{m}_{s,o} \qquad (3.4)$$

where all but $\dot{m}_{s,o}$ are known at design conditions.

The central heat exchanger was sized according to the heat exchanger heat transfer equation (Ljunggren and Wollerstrand 2006; Karlsson and Ragnarsson 1995; Lienau et al. 1998):

$$Q = U \cdot A \cdot LMTD \tag{3.5}$$

Where Q is the amount of heat transferred, U is the overall heat transfer coefficient (W/m$^2\cdot$°C), A is the area of the heat exchanger (m^2), and $LMTD$ is the logarithmic mean temperature difference:

$$LMTD = \frac{(T_{1,in} - T_{2,out}) - (T_{1,out} - T_{2,in})}{ln\left(\frac{T_{1,in} - T_{2,out}}{T_{1,out} - T_{2,in}}\right)} \tag{3.6}$$

With two heat exchangers in each loop (the central heat exchanger and the building radiator), two LMTD's can be calculated:

$$LMTD_{HX} = \frac{(T_{ps} - T_{ss}) - (T_{pr} - T_{sr})}{ln\left(\frac{T_{ps} - T_{ss}}{T_{pr} - T_{sr}}\right)} \tag{3.7}$$

$$LMTD_{rad} = \frac{(T_{ss} - T_i) - (T_{sr} - T_i)}{ln\left(\frac{T_{ss} - T_i}{T_{sr} - T_i}\right)} \tag{3.8}$$

At design conditions, Q is taken as the average maximum daily demand (see section 3.2.3) and U is assumed to be 5000 W/m$^2\cdot$°C, a good estimate for geothermal applications according to Zhu and Zhang (2004) and Lienau et al. (1998). Equation 3.5 can then be solved by plugging in $LMTD_{HX}$ (equation 3.7) at design conditions to obtain the size of the primary heat exchanger, A. Depending on the temperature regime selected, the peak community-wide demand, and the proportion of a community's demand being met by a single GDH plant, central heat exchanger areas may vary by an order of magnitude from roughly 50-500 m^2.

Flow Rate and Temperature Calculations To estimate pumping costs, an average system ΔT, and the system-wide capacity factor daily flow rate and return temperature vectors were calculated.

First, the secondary fluid return temperature (T_{sr} – fluid returning from buildings' heating systems) was estimated using the following empirical correlation for radiators (Ljunggren and Wollerstrand 2006; Karlsson and Ragnarsson 1995):

$$\frac{[\underline{LMTD}_{rad}]}{LMTD_{rad,o}} = \left(\frac{[\underline{Q}_{rad}]}{Q_{rad,o}}\right)^{n} \tag{3.9}$$

Setting $[\underline{Q}_{rad}]$ equal to the daily demand vector (see section 3.2.3), $LMTD_{rad,o}$ equal to its scalar value at design conditions, $Q_{rad,o}$ equal to the peak design demand (scalar), and assuming a typical radiator constant, n, of 1.3 (Karlsson and Ragnarsson 1995; Lukawski 2010), equation 3.9 can be solved (for each day of the year) to yield a daily $[\underline{LMTD}_{rad}]$ vector. From this, a daily secondary fluid return temperature $[\underline{T}_{sr}]$ vector was calculated using equation 3.8, given that T_{ss} and T_i are assumed constant throughout the year. A daily secondary fluid mass flow rate $[\underline{\dot{m}}_s]$ vector was finally calculated using the basic thermodynamic relation in equation 3.4.

With a $[\underline{T}_{sr}]$ vector, equations 3.5 and 3.7 were then used to calculate the daily primary fluid return temperature $[\underline{T}_{pr}]$ vector. However, the heat transfer coefficient, $[\underline{U}]$, varies as a function of the Nusselt, Prandtl, and Reynolds numbers of the fluid (Karlsson and Ragnarsson 1995). This can be simplified using the following approximation for U from Lukawski (2010):

$$U = C \cdot \left(\frac{1}{\dot{m}_p^{\,0.7}} + \frac{1}{\dot{m}_s^{\,0.7}}\right)^{-1} \tag{3.10}$$

where C is a constant that can be determined given the known values of $\dot{m}_{p,o}$, $\dot{m}_{s,o}$ and U_o at design conditions. Equations 3.10 and 3.7 were then substituted into equation 3.5 to yield:

$$[\underline{Q}] = C \cdot \left(\frac{1}{[\underline{\dot{m}}_p]^{0.7}} + \frac{1}{[\underline{\dot{m}}_s]^{0.7}} \right)^{-1} \cdot A \cdot \frac{(T_{ps} - T_{ss}) - ([\underline{T}_{pr}] - [\underline{T}_{sr}])}{ln\left(\frac{T_{ps} - T_{ss}}{[\underline{T}_{pr}] - [\underline{T}_{sr}]} \right)} \tag{3.11}$$

However, equation 3.11 is still a single equation with two unknowns: $[\underline{T}_{pr}]$ and $[\underline{\dot{m}}_p]$. Thus equation 3.4 was solved for $[\underline{\dot{m}}_p]$ and then plugged into equation 3.11 to yield:

$$[\underline{Q}] = C \cdot \left(\left(\frac{[\underline{\dot{m}}_s](T_{ss} - [\underline{T}_{sr}])}{T_{ps} - [\underline{T}_{pr}]} \right)^{-0.7} + [\dot{m}_s]^{-0.7} \right)^{-1} \cdot A \cdot \frac{(T_{ps} - T_{ss}) - ([\underline{T}_{pr}] - [\underline{T}_{sr}])}{ln\left(\frac{T_{ps} - T_{ss}}{[\underline{T}_{pr}] - [\underline{T}_{sr}]} \right)} \tag{3.12}$$

Equation 3.12 was solved in MATLAB to obtain the daily primary fluid return temperature vector (T_{pr}) given the daily $\dot{m}_s$, T_{sr}, and Q (demand) vectors, while T_{ps}, T_{ss}, C, and A are constant. With the daily T_{pr} vector, equation 3.4 was used one last time to solve for the daily primary mass flow rate vector $[\underline{\dot{m}}_p]$.

At this point daily vectors for demand $[\underline{Q}]$, primary fluid return temperature $[\underline{T}_{pr}]$, primary fluid mass flow rate $[\underline{\dot{m}}_p]$, secondary fluid return temperature $[\underline{T}_{sr}]$, and secondary fluid mass flow rate $[\underline{\dot{m}}_s]$ were determined. With these values the average flow rate, average power delivered, average return temperature, and total daily and annual energy delivered could be estimated for each plant. These variables were later used during levelized cost calculations to estimate the net heat sold each year and each GDH plant's capacity factor.

Peak Boilers GDH plants were sized to meet the average maximum daily demand, leaving any instantaneous extreme peak demand to be met by peak boilers (for example if the temperature drops to -20°C (-4°F) for six hours overnight). The required capacity of peaking boilers was determined by multiplying the instantaneous extreme peak demand (calculated using T_{absmin}) by the proportion of total demand met by a single plant (calculated as the max power from a single GDH plant divided by the community's average maximum design demand) and then subtracting the maximum power of a single GDH plant (as calculated by GEOPHIRES). In this way, the peak boiler capacity that must be installed with each GDH plant was estimated:

$$Req'dBoilerCapacity/plant = \frac{MaxPower/plant}{Ave.MaximumDesignDemand} \cdot ExtremePeak - MaxPower/plant \tag{3.13}$$

3.3.4 Surface Equipment Investment Costs

Note: all costs presented have been normalized to 2012 USD unless otherwise noted.

Piping Capital costs for distribution piping were obtained from Rafferty (1996). The costs were broken down into component parts (i.e. piping and joints, thrust blocks, road cutting and repaving, labor, etc.) and the United States Bureau of Labor Statistics Producer Price Index (PPI) was used to bring each component cost to 2012 dollars, resulting in the following curve:

$$k_{pipe} = 80.08 \cdot D_{in} + 195.96 \tag{3.14}$$

where D_{in} is the pipe diameter and k_{pipe} is the installed unit cost of distribution piping ($/m).

Equation 3.14 represents the total net capital cost of purchasing and installing pre-insulated ductile iron piping in a double-loop (that is, supply and return piping in the same trench). According to Lienau et al. (1998) ductile iron piping seemed to be the piping of choice for district heating systems around the turn of the century. The net installed costs range from $473/m for 3" diameter piping to $1168/m for 12" pipe. The total estimated piping length (section 3.3.1) and required pipe diameter (section 3.3.2) were used to determine the total cost of piping required at each "place."

The capital cost of distribution pumps was calculated using the maximum daily required pumping energy (see section 3.3.5) and a cost of $150/kW installed pumping capacity.

Heat Exchanger Substations Heat exchanger costs were determined in two ways: (1) a centralized setup, with a single central heat exchanging facility at the well site and (2) an "indirect," decentralized setup where each building has its own heat exchanging substation. Once the two costs were determined, the lesser of the two was noted and selected as the most economic heat exchanger setup.

It was assumed that plate-and-frame heat exchangers would be used in the case of a central heat exchange system, as they are larger and heavier-duty than brazed-plate or shell-and-tube exchangers and are commonly used in geothermal applications (Zhu and Zhang 2004).

In the case of individual building heat exchangers, brazed-plate heat exchangers were assumed since they tend to be cheaper but are limited to smaller sizes (Lienau et al. 1998). Purchased cost curves from Lienau et al. (1998) for plate-and-frame (>25 ft^2) and brazed-plate (<20 ft^2) heat exchangers were aggregated and brought to 2012 dollars using the PPI to yield:

$$k_{hx} = 222.36 \cdot A_{hx}^{-0.379} \tag{3.15}$$

where k_{hx} is the cost factor for a plate heat exchanger ($/$ft^2$) of size A (ft^2). Multiplying k_{hx} by A_{hx} provides the net purchased cost of the heat exchanger.

For the centralized heat exchange facility, the heat exchanger area required for the whole community (as determined in section 3.3.3) was multiplied by the proportion of the community demand being met by a single GDH plant (see section 3.4.2, step 6)and the cost then estimated according to Equation 3.15. The additional cost of the heat exchange facility (i.e. instruments and controls, piping, pumps, installation costs, and the building itself) were estimated from Rafferty (1996) based on the maximum capacity of the heat exchange facility (i.e. the max capacity of a single GDH plant) and brought to 2012 dollars. This resulted in a final installed cost for the central plant of:

$$K_{CentalPlant} = 34290 \cdot Q_{max} + 74987 + k_{hx} \cdot A_{hx} \tag{3.16}$$

For a decentralized heat exchange system each building has its own small heat exchanging substation, typically ranging roughly two orders of magnitude from around 10 m^2 or more for the largest apartment buildings and malls to as small as 0.1 m^2 for the smallest homes and businesses. In this scenario PHEs were sized similarly to the method used in section 3.3.3 only the average peak heat demand for each building was used (see section 3.3.2) rather than the peak heat demand for the entire community. From this, the required heat exchanger area to meet the demand for each building size was determined, with typical values ranging from <0.5 m^2 to nearly 100 m^2 depending on the temperature regime and building size and type. The purchased cost was then estimated according to equation 3.15 and the number of buildings of each size summed to obtain a total estimated heat exchanger cost for a decentralized building substation setup. Installation costs for this scenario were estimated and calculated on a per-building basis as an additional 10% of the total building retrofit cost (see below).

The lesser of either the centralized or decentralized heat exchanger setup in terms of total capital cost per GDH plant was then selected for use in LCOH calculations.

Other Building Costs Several other costs associated with outfitting buildings for GDH were incorporated into the model. Service pipe sizes were estimated in section 3.3.2. A cost curve for pre-insulated cross-linked polyethylene (PEX) service lines was estimated using data in Rafferty (1996), Lienau et al. (1998), and the 2011 PPI, resulting in:

$$k_{srvc} = 132.90 \cdot D + 53.36 \qquad (3.17)$$

where k_{srvc} is the unit cost (\$/m) for PEX service pipe of diameter D (inches), valid for service lines of up to 3” diameter. The length of service lines was then estimated at 35 meters/building for the base reference case (see section 3.3.1).

The other costs associated with retrofitting a building, such as the additional cost of wall cuts, building piping, controls, coil heaters or unit heaters (if required), etc. were estimated from Rafferty (2003) and a 2012 report from the BioRegional Development Group (BioRegional 2012). These costs were split into two categories: costs required on a per unit basis and those required on a per building basis, and summed based on the total number of units and buildings of each category served by a single GDH plant to provide an estimate of the total cost of retrofitting. Costs assumed on a per unit basis include control units and interconnections to existing heating systems, which were estimated at $2000/unit. In reality, costs would likely be lower for units with older hot water radiator heating and more costly for units with forced-air heating due to the ease of retrofitting hot-water based heating systems and the added equipment required to retrofit a forced-air system to accept a hot-water or steam input. Costs assumed on a per-building basis are summarized in Table 3.4 and include outside wall cuts, main/tap boxes, building pipe, booster pumps (if necessary), and additional hot water retrofits (if necessary).

Table 3.4 Additional estimated retrofit costs per building by building size.

Building Size	Estimated Building Retrofit Costs
Detached	3000
Attached	3000
2-4 units in building	4000
5-19 units in building	5000
20-49 units in building	6000
50+ units in building	8000
Commercial buildings	3000*(est. commercial units/building)

For example, a single detached house (1 unit) would have a total estimated retrofit cost of:

$$2000\frac{\$}{unit}\cdot 1\ unit + 3000\frac{\$}{bldg}\cdot 1\ bldg = \$5000$$

And a 5-19 unit apartment building (13 units assumed) would have a retrofit cost of:

$$2000\frac{\$}{unit}\cdot 13\ units + 5000\frac{\$}{bldg}\cdot 1\ bldg = \$31000$$

Peak Boilers The installation cost of peak boilers was estimated from costs published by the Consortium for Energy Efficiency (2001). The installed cost was roughly estimated based on the excess instantaneous peak demand needing to be met (MBTU/hr. – section 3.2.3):

$$PeakBoilerCost = (ExcessPeak \cdot 50)^{0.95} \tag{3.18}$$

3.3.5 Surface Equipment Operation and Maintenance Costs

Pumping Costs In order to calculate distribution pumping costs, pressure losses in the distribution piping network first had to be determined. This was accomplished using the equation for head loss due to friction in piping:

$$h_f = f_m \cdot \frac{L}{D} \cdot \frac{V^2}{2g} \tag{3.19}$$

where L is the length of piping (m), D is the diameter of pipe (m), V is the fluid velocity (m/s), g is the gravitational constant (m/s^2) and f_m is the dimensionless friction factor. L, D, and g are known, and V can be calculated for each day given the primary fluid mass flow rate vector, the pipe diameter, and the density of water. Using a Moody diagram and assuming a turbulent flow regime in iron piping, f_m was assumed to be 0.27. With equation 3.19 solved, pressure losses in the pipe were then be calculated as:

$$\Delta p = \gamma \cdot h_f \tag{3.20}$$

where γ is the specific weight of the primary fluid ($\rho \cdot g$ – units of kg/m^{2}s^2), h_f is the head loss (m), and Δp is the pressure loss in N/m^2, or pascals. Finally, required pumping energy was determined as:

$$P_{pump} = \Delta p \cdot \frac{\dot{m}_p}{\rho} \cdot \frac{1}{\eta} \tag{3.21}$$

where $\dot{m}_p/\rho$ (mass flow / density) is the volumetric flow rate of the primary fluid (m^3/s), η is the pump efficiency, assumed to be 80%, P_{pump} is the required pumping power (W), and the primary fluid is assumed to be incompressible.

The above calculations were all performed in the MATLAB shell using the daily mass flow rate vector (section 3.3.3), which resulted in a daily pump power vector with units of W/day. This was then multiplied by 24/1000 to convert from average watts required each day to net kWh/day. The pump power vector was then summed and multiplied by the 2012average price of electricity for industrial purchasers in New York and Pennsylvania: 7¢/kWh (EIA 2012). This yielded a total annual estimated distribution pumping cost per plant per "place."

Maintenance Costs Other service, maintenance, and repair costs for the district heating network and substations were obtained from Schmitt and Hoffmann (2002) and brought to 2012 dollars, resulting in an overall estimated maintenance cost of $7.65 per year per meter of network.

Peaking Fuel Cost The cost of fuel required to satisfy instantaneous peak demand periods was estimated assuming that extreme excess peak periods would occur for only 30 hours per year (section 3.2.3). Assuming a standard boiler efficiency of 85% and using the 2012 average natural gas price for industrial consumers in NY and PA of $7.51/MCF (EIA 2012c), the peak fuel costs were calculated as:

$$PeakfuelCost = \frac{ExcessPeakMBTU/hr \cdot 30hrs}{0.8 \cdot 1020\ MBTU/MCF} \cdot \$7.51/MCF \qquad (3.22)$$

3.4 Model Implementation

3.4.1 Temperature and User-Input Selection

Several input variables were left to the user's discretion, including the production temperature, distribution heat losses, the maximum well flow rate, and the secondary heating system temperature regime.

A short literature review provided guidance for the selection of appropriate production temperatures (T_{ps}). Of 22 U.S. GDH systems reviewed by Thorsteinsson (2008) the highest operating temperature was 99°C and highest system ΔT ($T_{ps} - T_{pr}$) was 37°C, while the averages were 73°C and 22°C, respectively. Skagestad and Mildenstein (2002) observed that even on a more global scale, typical GDH systems operate with production temperatures in the range of 68-85°C and a ΔT of 20-34°C. They reference a single 140/75 system (T_{ps}/T_{pr}; ΔT = 65°C) as an extreme case. According to Gustaffson et al. (2008), "low tempered systems with an outgoing temperature between 70 and 110°C are found to be energy efficient, and are hence used at a large extent." Brown (2007) noted that the Klamath Falls GDH system was initially designed for a ΔT of 40°C and that only with new improvements may ΔT soon increase to 60°C.

Piping and technology assumptions also provide constraints on the acceptable production temperatures. According to Skagestad and Mildenstein (2002), "it is common to operate the supply water temperature below 120°C. Studies have shown that by reducing the normal operating temperature and by reducing the effects of pressure fluctuations, the life of the pipe work can increase dramatically." They suggest that at 120°C the expected lifetime for typical DH distribution equipment is around 30 years, while increasing T_{ps} only slightly to 130°C may decrease expected equipment lifetime to as little as 10 years (Skagestad and Mildenstein 2002). Of course there is equipment that can withstand the higher temperatures and more extreme pressure fluctuations associated with a higher T_{ps} and ΔT, but this equipment also costs significantly more than the equipment modeled in this study.

Therefore, six production temperatures were investigated: 75, 85, 95, 105, 115 and 125°C. A maximum system-wide ΔT of 65°C was also applied as an extreme constraint on the primary fluid return temperature (T_{pr}).

Heat losses in the distribution network were modeled very simply as a linear function of the network length. This assumption was based on the work of Ryan (1981), who suggested a temperature loss rate of roughly 0.25°C per km of distribution piping for buried 6” insulated piping (the most common size modeled in this study). By keeping production temperature to a minimum, the difference between the fluid temperature and the temperature of the surrounding earth can be minimized, reducing heat losses in the network and providing yet another reason to limit T_{ps} to less than 125°C. Allowing T_{ps} to significantly exceed 125°C would render the 0.25°C/km heat loss rate too low an estimate. In theory the insulation thickness of the system piping could be increased in order to further reduce heat losses, but the capability to model the added costs and effects of this were not compatible with and thus not incorporated into the model developed.

3.4.2 Three Deployment Scenarios

In order to evaluate the potential for EGS district heating in the near future, three base case scenarios corresponding to various levels of technologic achievement and phases of deployment were evaluated: (1) an **Initial Learning** phase, (2) a **Midterm Development** phase, and (3) a **Commercially Mature** technology. Assumptions for the Initial Learning phase were made using known conservative values and costs that are possible given today’s technology. Assumptions for the Midterm Development phase and Commercially Mature technology were then made assuming that improvements to technology and reductions in costs would occur due to the effects of learning and given proper commitment to R&D.

For the Initial Learning phase, maximum mass flow through an EGS reservoir was assumed to be 30 kg/s. This value coincides with the highest known flow rates for the Soultz EGS demonstration project, which has produced at 25 kg/s and is expected to be capable of 35 kg/s under the right conditions (Genter et al. 2010). In their respective studies, Augustine et al. (2010) at NREL and the MIT *Future of Geothermal Energy* report both assumed a 30 kg/s EGS reservoir production rate for their baseline reference cases. This initial flow rate was expected to increase to 50 kg/s and 80 kg/s for the Midterm Development and Commercially Mature cases, respectively.

Secondary heating system operating temperatures were set at 70/40°C for the Initial Learning phase, the logic for which was given in section 3.3.3. It was assumed that improvements to home heating system technology would reduce the required secondary heating regime to 50/30°C by the time the Commercially Mature phase is reached.

It was also assumed that reductions in the capital and operating costs of EGS district heating would occur due to learning, research, and economies of scale. A simple multiplier was applied to the capital and O&M costs prior to evaluating the final LCOH (section 3.4.2) to account for these effects.

Several other assumptions were varied between the three deployment scenarios including increases in the price of natural gas, efficiency improvements, and advances to heat exchanger technology. Table 3.5 summarizes all constant, user-defined inputs and assumptions in the model for the three deployment scenarios.

Table 3.5 Constant user-defined inputs and their values for the three deployment scenarios.

Parameter	Initial Learning (years 0-5)	Midterm Development (years 6-20)	Commercially Mature (years 20+)
Maximum Flow Rate	30 kg/s	50 kg/s	80 kg/s
Lifetime	30 years	30 years	30 years
Drilling/Comp Costs	100%	90%	85%
Plant/Network Costs	100%	95%	90%
O&M Costs	100%	95%	90%
Secondary Temperature Regime	70/40 ºC	60/35 ºC	50/30 ºC
Minimum Pinch Temperature	3.0 ºC	2.5 ºC	1.5 ºC
Production Temperature Range	75 – 125 ºC	75 – 125 ºC	75 – 125 ºC
Maximum System-Wide ΔT	65 ºC	65 ºC	65 ºC
HX Heat Transfer Coefficient	5000 $W/(m^2 \cdot K)$	5500 $W/(m^2 \cdot K)$	6000 $W/(m^2 \cdot K)$
Discount Rate (CBO rate)	4.0%	4.0%	4.0%
Portion of Roads w/DH Network	75%	75%	75%
Branch Distance (service lines)	35 m	35 m	35 m
Network Pump Efficiency	80%	85%	85%
Peak Boiler Efficiency	85%	90%	90%
Network Maintenance Costs	7.65 $/m/yr	7.65 $/m/yr	7.65 $/m/yr
Natural Gas Purchase Price	7.51 $/MMBTU	8.26 $/MMBTU	10.51 $/MMBTU
Electricity Purchase Price	7 ¢/kWh	7 ¢/kWh	7 ¢/kWh
Well Separation	500 m	500 m	500 m

3.4.3 Levelized Cost of Heat Calculations

The levelized cost of heat was estimated in two ways: using a fixed-charge rate method and a simple discounted cash-flow method.

The levelized cost calculations built into GEOPHIRES use a fixed-charge rate method to estimate the cost of energy by applying a user-defined fixed annual charge rate (FACR) to the capital investment (I), adding the annual operation and maintenance cost (O&M), and dividing by the annual production (Q) to determine the estimated cost of heat (COH) in \$/MMBTU:

$$COH = \frac{I \cdot FACR + O\&M}{Q} \tag{3.23}$$

The fixed charge rate methodology “allows for quick determination of the amount of revenue needed to cover investment costs for simple, straightforward investments” and can be used for projects that “not only have constant output, but also constant O&M and no financing” (Short et al. 1995). Such are the assumptions for the simple model presented here. Specifically, the FACR represents “the average, or ‘levelized’ annual carrying charges including interest or return on the installed capital, depreciation or return of the capital, tax expense, and insurance expense associated with the installation of a particular generating unit” (Shaalan 2001). For a typical investor-owned commercial scale utility the FACR may run 15-20%, while the FACR for a publicly owned utility is generally around 5% (Shaalan 2001). For the base reference case, a FACR of 6% was chosen to represent a typical value for a publicly-owned utility yet still provide a slightly conservative estimated COH.

The major drawback with the fixed annual charge rate methodology is that effects of changes in the plant lifetime are wrapped up in the assumed FACR value, making sensitivity analyses evaluating plant and equipment lifetime difficult. For this reason, a second levelized cost of heat (LCOH) methodology was used outside of the GEOPHIRES model. This utilized a discounted cash-flow methodology:

$$LCOH = \frac{\Sigma_{t=1}^{Lifetime} (I_t + O\&M_t) \,/\, (1 + d)^t}{\Sigma_{t=1}^{Lifetime} Q \,/\, (1 + d)^t} \tag{3.24}$$

where I_t is the capital investment in year t, $O\&M_t$ is the total operation and maintenance cost in year t, Q is the energy sold in year t, and d is the discount rate. To make the comparison between the two cost estimation methods comparable, typical discount rates for public utilities rather than investor-owned utilities were used. The U.S. Department of Commerce calculates an effective discount rate for use with analyses of federal and public energy projects that is based on the average long-term Treasury bond rates and the inflation rate. For 2011, this discount rate was 3% (Rushing et al. 2011). As was done with the FACR rate above, 1% was added to this to ensure a conservative estimate for the base reference case. Thus, the discount rate applied to LCOH calculations for the base reference case was 4%.

A four-year building period was allowed during LCOH calculations. Drilling and completion costs were divided in two and applied equally to years 1 and 2 of the building phase. Total surface costs were then spread over years 2-4 at rates of 1/6, 2/6 and 3/6 of total cost each of years 2, 3 and 4 respectively. First production would thus begin in year 5 for each project.

3.4.4 Overall Model Workflow

At this point all the necessary calculations and inputs have been explained. Figure 3.1 previously offered a visual representation of how all the pieces fit together within a single, fluid model. The workflow can be broken down into nine steps, also illustrated in Figure 3.6 (p. 59):

1) From ArcGIS the geothermal gradient, surface temperatures, and length of road (as described in section 3.3.1) at each of the 2894 census "places" was determined and stored in a single input spreadsheet in Microsoft Excel. Building data (section 3.3.2) was also pulled into this input spreadsheet. Figure 3.7 (p. 60) shows an example snapshot of the input spreadsheet.

2) The MATLAB shell program is initiated and MATLAB reads and stores the input data from the input spreadsheet. The shell program also contains all other user-defined input values.
3) Beginning with the first census “place” on the input spreadsheet, MATLAB performs the necessary demand, temperature, flow, sizing, and cost calculations as described above in sections 3.2 and 3.3.
4) GEOPHIRES 1.0 is executed by the MATLAB shell. MATLAB passes the geothermal gradient, the design injection temperature, the maximum well flow rate, the plant lifetime, the fixed annual charge rate, the surface equipment investment and operating costs, and the electric price to GEOPHIRES. MATLAB also makes initial guesses at the drilling depth required to reach the desired production temperature and the capacity factor of the geothermal plant.
5) For the given set of inputs, GEOPHIRES calculates the estimated drilling and completion costs, wellfield operation costs, the average production temperature, the maximum thermal power, and the projected LCOH for the GDH plant. These values are then returned to MATLAB.
6) MATLAB compares the production temperature as determined by GEOPHIRES with the user-defined production temperature and, if the difference is greater than 0.5°C, adjusts the depth guess accordingly. From the max thermal power returned by GEOPHIRES and the average community-wide peak demand, MATLAB also determines the proportion of the total community demand that a single GDH plant can satisfy. This proportion is then used to scale the required primary fluid mass flow rate and the surface equipment sizes and costs (all described in section 3.3). In this way a GDH plant that is only capable of serving 20% of a community will not be attributed the costs and flow rates required to serve the entire community. Rather it will only incorporate 20% of the total community costs and required flow rate; the underlying assumption being that 5 individual GDH plants will then be constructed to serve the whole community. Finally, the capacity factor of each plant is also updated based on the max thermal power and the demand profile for each GDH plant.

7) The new values are returned to GEOPHIRES, which repeats step 4. Steps 4 and 5 are then iterated in a loop until a final drilling depth, thermal power, and LCOH are converged upon.
8) MATLAB stores all the results in a series of matrices and then moves on to the next census "place" and repeats steps 3 through 7. Once all census "places" have been run through the program for a given temperature, MATLAB repeats the entire process again for the next desired production temperature. In this way the MATLAB shell can perform the necessary calculations and LCOH estimates at all 2894 "places" for up to 6 production temperatures with a single click of a button.
9) Once all calculations are finished, MATLAB prints the stored results to an output Excel spreadsheet.

These steps are illustrated in Figure 3.6. Note that Figure 3.6 differs from Figure 3.1 in that it attempts to illustrate the chronological order of computational steps, whereas Figure 3.1 attempts to illustrate the overall data analysis strategy organized by conceptual rather than computational divisions. Processing time for a single data run (steps 2-9, as step 1 was only

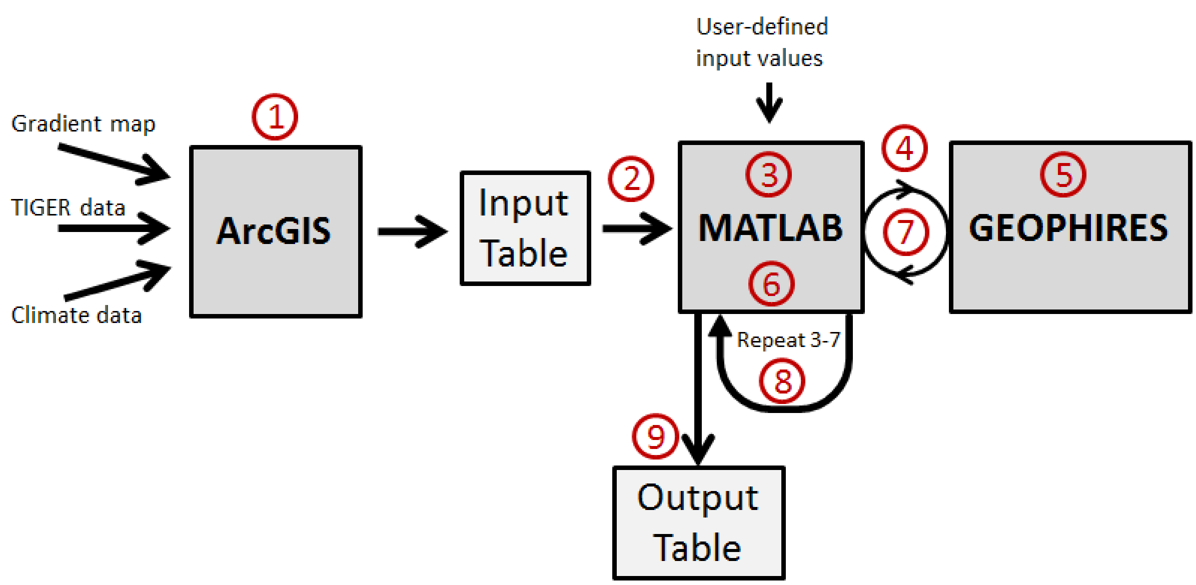


Figure 3.6 Chronology of computation steps as performed during a single data processing run. Dark grey boxes represent individual software suites, light grey boxes represent excel spreadsheets, and red numbers correspond to the nine steps as outlined above.

	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R
1	Place Geo Id	Geographic area	Tave_annual	Tmin_jan	Tabs_min_est	sfRes	sfAFS	sfASW	sfAER	sfEdu	sfRet	L_network	GradLocal	Res_Bldgs	Res_Units	Com_Bld
18	3651055	Niagara Falls city	8.4134926	-8.4252831	-23.390337	58912200	2186867	873710	199891.9	254007.4	1162255	288682.0725	21.928068	19116	27095	455.785
19	3665508	Schenectady city	8.3084915	-11.131306	-27.820372	57569397	1855072	1150740	223186.7	401779	978623.5	237439.9019	25.677076	18641	31552	508.866
20	4242928	Levittown CDP	11.626647	-5.5474453	-18.272699	53526726	1962550	1278600	153476.5	180579.8	1405575	245857.116	24.15	17550	19439	547.786
21	3676540	Utica city	7.75802	-11.798036	-28.37991	53237898	1698436	1342530	159386.5	144668.7	976568.3	317305.9403	24.046732	17137	28432	520.804
22	3650617	New Rochelle city	11.289542	-5.2403004	-18.05991	52457578	1464413	3516150	396418.4	373139.5	1127142	237659.0405	24.15	14055	30136	612.707
23	4202184	Altoona city	9.3745964	-8.36931	-23.179361	51895983	1813703	1555630	286182.9	287099.6	1566304	238833.8522	25.697781	16711	20956	616.674
24	3642081	Levittown CDP	11.438493	-4.2617153	-17.557985	48779756	1330676	1409770	337997.6	361822.6	1276339	171442.6326	24.15	16313	17258	518.39
25	3649121	Mount Vernon city	11.447557	-5.0351791	-18.007509	48738526	851594.7	1513010	131820.7	174487.1	876481.3	110962.2585	24.15	12904	29584	374.086
26	3680907	West Seneca CDP	8.3702972	-8.9181519	-23.392874	46928487	1409730	1321220	121649.1	386456.1	1158623	277738.9206	28.447271	15399	19128	484.841
27	3606607	Binghamton city	8.1047256	-9.9249039	-26.619226	46071135	1719096	1321220	254142.6	234018.2	1011368	235357.6957	23.490889	14388	24595	454.789
28	4232800	Harrisburg city	11.241133	-6.2318966	-18.364054	44443753	1433050	1704800	227810.8	280146.4	753620.3	176479.8253	24.15	9979	25649	418.903
29	4241216	Lancaster city	11.112992	-6.6425194	-18.31719	43104271	1281686	1449080	207374.7	175677.3	1347540	142030.8888	24.15	10502	23914	448.091
30	4285152	Wilkes-Barre city	9.3255905	-9.0824806	-22.892426	40940033	1517975	958950	128439.8	74187.07	1393261	155953.1135	21.064878	12034	19467	455.597
31	3679246	West Babylon CDP	11.347266	-4.4228516	-17.681717	38797344	983613	1370610	192972.7	258838.1	1172885	171457.8407	24.15	12639	15013	472.847
32	3634374	Hicksville CDP	11.321459	-4.4525749	-17.70974	38591924	1767301	2143517	471360.2	591573.9	1535749	163162.2158	24.15	12915	13936	808.303
33	3681677	White Plains city	10.823837	-6.0072674	-18.807005	38109045	1498091	4581650	239140.3	598554	1635633	184826.8606	24.15	9235	24071	788.719
34	3608026	Brentwood CDP	11.134651	-4.7030304	-18.09483	37746347	1927836	2394074	342433.7	526273.8	1710683	209255.1515	24.15	12518	14184	785.138
35	3675484	Troy city	8.569416	-11.143147	-27.270109	37175241	1153074	809780	144277.3	190975.6	561755.8	200478.6334	27.264914	11206	23473	309.546
36	3608257	Brighton CDP	8.631031	-8.9275337	-23.40457	36461564	1003236	1555630	195182.3	364739.4	599714.1	226083.3942	21.032795	10672	17557	430.03
37	4287048	York city	11.25393	-6.4265579	-19.178482	36394843	904043	809780	101437	234360.7	592153.8	124519.6456	24.15	9442	19340	295.328
38	4206064	Bethel Park municipality	10.012064	-7.9165421	-23.435959	34325143	1171042	1001570	210756	95647.35	1211957	222316.5309	23.202709	10769	13512	421.690
39	3653682	North Tonawanda city	8.4990898	-8.5	-23.54183	34138101	861843	681920	216637.5	214111.7	512153.7	175190.0384	25.587881	11165	14602	257.639
40	3617530	Commack CDP	10.95766	-5.0507839	-18.348732	33288359	1513448	1800179	330672.8	493670.2	1280683	252917.077	24.15	10959	11730	706.954
41	3627485	Freeport village	11.7	-3.9	-17.254038	33281130	779514	1164641	198000	211956.7	747683.2	118550.1561	24.15	10101	15070	303.679
42	3622502	East Meadow CDP	11.516629	-4.1446468	-17.491623	32954359	888077	1036167	225575.5	241476	851813.1	129806.4708	24.15	10679	12442	345.972
43	3633139	Hempstead village	11.617899	-3.9058365	-17.376202	32944283	756320.2	1464388	192108.7	205650.1	725436.5	93530.32722	24.15	9195	17778	294.643
44	3650100	New City CDP	10.608619	-6.8740547	-20.432276	31650421	1675133	1920789	405012.3	668765.5	1717168	260243.7757	24.15	10326	11433	710.395
45	3663418	Rome city	7.6367119	-11.433272	-28.777672	31566916	1106150	404890	205046	54282.68	841352.7	401299.1508	25.495802	10034	14789	311.267
46	4250528	Monroeville municipality	9.9030998	-8.3584503	-23.46995	31558788	1771003	1193360	247234.2	349073.8	2066769	263716.3695	30.74338	9654	13276	586.822
47	3618157	Coram CDP	10.806918	-5.1965408	-18.023909	31133324	696291.1	1157962	146704.7	205863.9	638760.1	232267.3348	24.15	8788	15025	265.768
48	3638264	Jamestown city	7.7144615	-9.6478462	-24.84169	30328357	997802.4	617990	164497.2	241189	770096.2	179012.5853	24.715105	9971	14884	306.325
49	3676705	Valley Stream village	11.807917	-3.8004166	-17.221895	30105194	846451.3	1019292	215002.4	230157.6	811887.1	89163.89574	24.15	10006	12032	329.756
50	3654441	Oceanside CDP	11.744225	-3.8	-17.174297	30099268	753639.7	872502.7	191427.8	204921.3	722865.4	108949.2974	24.15	9829	11363	293.599
51	4213208	Chester city	12.47718	-4.5837837	-17.379908	28964976	323218.1	298340	7777.381	82357.52	204985.1	114015.4441	24.15	6474	15723	94.1175
52	3637044	Huntington Station CDP	10.975655	-5.0628273	-18.26557	28812279	1388460	2039988	351332.6	498004.9	1280613	130936.5999	24.15	9498	10594	661.225
53	3613376	Centereach CDP	10.888119	-5.1146866	-18.056948	28755819	884492.5	934883.9	186357.8	261507.1	811411.3	185867.9378	24.15	9534	10360	337.603
54	3665255	Saratoga Springs city	8.0239594	-12.033495	-29.189915	28579829	2164129	916330	548214.6	369424.6	1009046	293320.2911	28.563536	8752	13268	471.435
55	4253368	New Castle city	9.4849495	-8.5561874	-24.01351	28102493	870642.7	575370	103986.7	251692	683403.2	163273.5968	29.140625	8965	11399	301.130
56	4261536	Plum borough	9.7013008	-8.6138573	-23.450256	28037238	570945.9	895020	189103.5	45308.9	392688.2	282163.4023	28.568665	8917	10688	200.573
57	3627309	Franklin Square CDP	11.721717	-3.9	-17.313381	27533665	711638.3	796716.8	180759.3	193500.7	682579.1	74060.07946	24.15	9283	10378	277.236

Sheet1 Sheet2 Sheet3

Figure 3.7 Snapshot of an input spreadsheet. Note that this a modified sample version and that not all variables are shown. The true input table has 37 columns of input data and 2894 rows - one for each "place."

performed once) varies to a small degree, but typically takes around 12-14 hours to process all 2894 “places” at 6 production temperatures, or about 2 hours to process all “places” at a single production temperature (Dell Optiplex 780 running an Intel Core 2 Duo processor at 2x 3.0 Ghz with 4.0 GB RAM). The MATLAB shell code in its entirety can be found in the Appendix.

3.5 Summary

With the model and data processing approach described here, census information and climate data were combined in a new way to obtain estimates for the spatial and temporal variability in space and water heating demand in New York and Pennsylvania. To this, geothermal resource maps, surface equipment and reservoir modeling, and unit cost estimates were added so that the final cost of providing heat from Enhanced Geothermal Systems (EGS) for each unique community in New York and Pennsylvania could be estimated. From these results, real opportunities for EGS district heating can be evaluated in a way that provides meaningful insight into the future of EGS district heating in New York and Pennsylvania. The core results and a discussion of the opportunities they illuminate will be the topic of Chapter 4.

Chapter 4
Results and Discussion

4.1 Base-Case Results

The supply curves generated using the initial, midterm, and mature base case assumptions are presented in Figure 4.1 (p. 64). (For background on supply curves and their utility refer to the end of Chapter 1 and/or the beginning of Chapter 3.) The figures plot successively higher levelized cost of heat (LCOH) against the total cumulative installed capacity across both New York and Pennsylvania. The model predicts a total installed capacity ranging from 70000 to 85000 MW_{th} (70-85 GW_{th}) between the two states, depending on the technology scenario. The difference is due to differences in well flow rates and reinjection temperatures between the three deployment scenarios that result in differences in heating capacity for a single GDH doublet system (refer to Section 1.2.2 for background on what a doublet is). The maximum power from a single GDH plant ranged from 7.67 to 13.34 to 20.87 MW_{th} for the initial, midterm, and mature cases, respectively.

Figure 4.2 (p. 65) shows the locations of the thirty "places" with the lowest LCOHs (i.e. LCOHs less than \$24.00/MMBTU) for the initial learning phase. In the initial learning phase, the lowest LCOH is \$18.86/MMBTU in DuBois, PA – a small town of 7,794 about 100km northeast of Pittsburgh in the Allegheny Plateau. Dubois requires an estimated 8 GDH doublet plants operating at 105°C with a capacity of 7.61 MW_{th} each (60.9 MW_{th} total) to meet its typical peak demand. There is nothing particularly outstanding or extraordinary about DuBois except that it happens to be the town where the most favorable combination of demand, density, geothermal gradient, and climate converge to permit an exceptionally low LCOH.

Notice also that the area around Buffalo, NY appears to be very promising for GDH development. This is likely due to its high population density (sections 4.2.1 and 4.2.2), the presence of a small geothermal anomaly just east of the city providing gradients of up to 35°C/km within the city (section 4.2.3), and the comparatively mild climate of the area owing to the stabilizing effect of lake Erie (section 4.2.4). Note also that none of the thirty lowest LCOHs for the initial learning phase fall in “places” outside the area for which gradient data exist. This is likely because the geothermal gradient provides a bound on the lowest possible LCOH, meaning that only places where a high anomaly may exist are able to achieve the lowest LCOHs of the dataset. This is evidenced by the fact that all thirty of the cheapest places at least touch (if even very slightly) an area of gradient 30°C/km or higher. A list of the ten places with the lowest initial LCOHs is presented in Table 4.1 (p. 66).

Figure 4.3 (p. 65) shows the estimated LCOH and total cumulative GDH capacity at each of the 2894 “places” in the dataset under the mature technology assumptions. This represents picture of what EGS-based district heating could look like in New York and Pennsylvania in the future. Note that generally as capacity increases (circles get larger) LCOH tends to decrease (circles get greener). With commercially mature technology, the lowest projected LCOHs drop to less than $11.00/MMBTU. The ten places with the lowest commercially mature LCOH are also shown in Table 4.1, and the base-case results for all 2894 places can be found in the Appendix.

With an initial learning phase map (Figure 4.2) that suggests the most economically attractive “places” to start initial studies and pilot projects and a commercially mature map (Figure 4.3) that pictures a future in which commercially mature EGS district heating technology is pervasive, the question remains of how to get from one to the other; or rather, how to get from the blue line to the green line in Figure 4.1. The remaining sections of this chapter provide analysis that will hopefully help better answer that question, including a detailed evaluation of the contributions of individual component costs (e.g. drilling vs. distribution capital costs) to the overall cost of GDH.

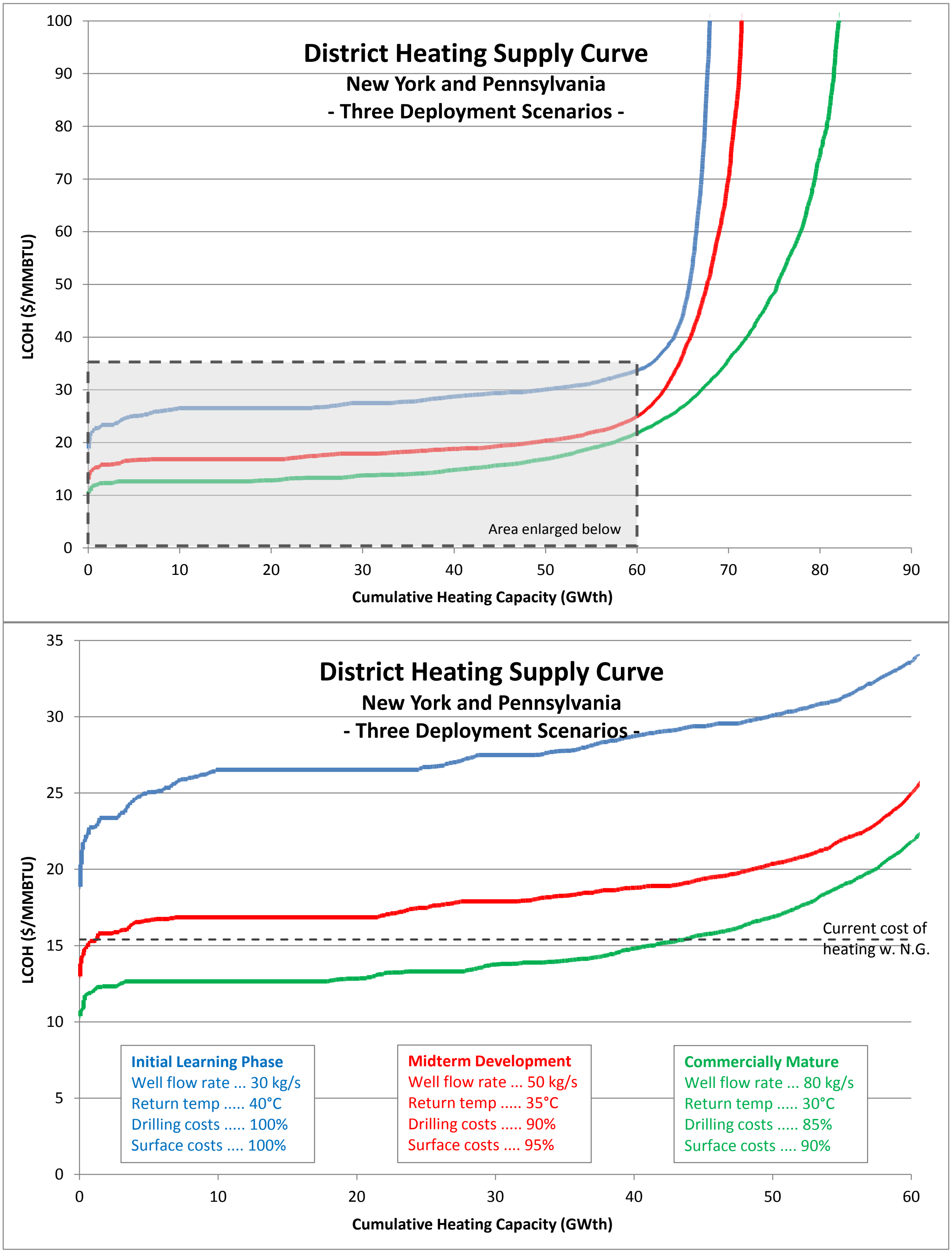


Figure 4.1 Full supply curves for each scenario (4.1a, top) and a comparison of the cheapest 60 GW_{th} to the current cost of heating with natural gas in NY and PA (4.1b, bottom).

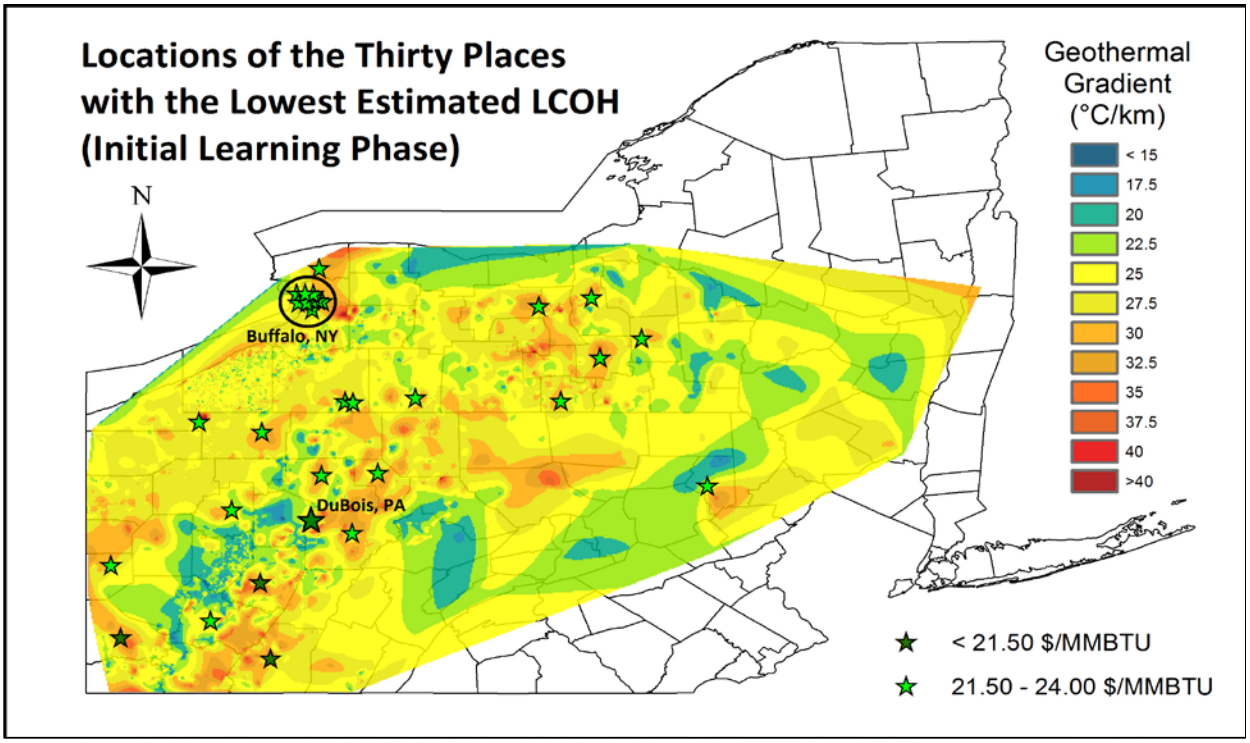


Figure 4.2 Locations of all thirty census places with an estimated LCOH of less than $24/MMBTU for the initial learning phase. Note the location of DuBois, PA, where the right combination of climate, demand density, and gradient permit the lowest LCOH.

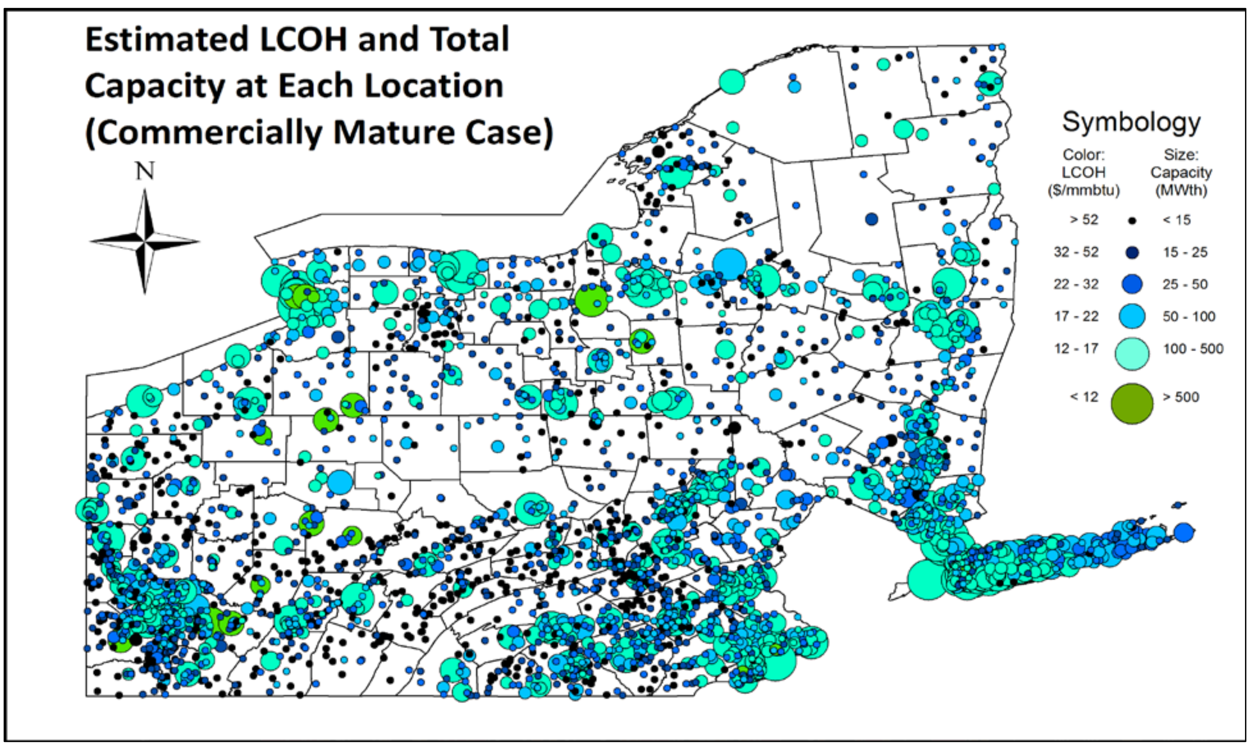


Figure 4.3 Estimated LCOH and total generating capacity of all 2894 places for the commercially mature technology case.

Table 4.1 The ten lowest LCOHs for both the initial learning phase and commercially mature technology assumptions. Note that the top two places (DuBois and Washington) remain the same but the others all change order. Also note that all of these "places" are relatively small towns or boroughs with populations between 4000 and 28000 residents.

	Initial Learning Phase				**Commercially Mature Case**			
Rank	**LCOH**	**Place**	**Population**	**Capacity (MW)**	**LCOH**	**Place**	**Population**	**Capacity (MW)**
1	18.86	DuBois, PA	7794	60.9	10.38	DuBois, PA	7794	60.5
2	20.31	Washington, PA	13663	84.0	10.73	Washington, PA	13663	81.7
3	21.24	Indiana, PA	13975	53.5	10.81	Greensburg, PA	14892	102.5
4	21.30	Somerset, PA	6277	37.7	10.91	Indiana, PA	13975	41.0
5	21.74	Clarion, PA	5276	22.7	11.42	Eggertsville, NY	15019	81.4
6	21.78	Greensburg, PA	14892	114.6	11.74	Kenmore, NY	15423	61.9
7	21.90	Corry, PA	6605	29.8	11.75	Jenkintown, PA	4422	20.6
8	22.00	Warren, PA	9710	53.1	11.77	Warren, PA	9710	40.0
9	22.26	Auburn, NY	27687	128.7	11.81	Media, PA	5327	20.6
10	22.27	Eggertsville, NY	15019	76.1	11.82	Bradford, PA	8770	60.5

4.1.1 Learning Curve Effects

In order to get a better understanding of what the transition to EGS district heating in New York and Pennsylvania might look like, a new supply curve was developed that attempts to combine the initial learning phase, the midterm development phase, and the commercially mature technology case. It was assumed that technology improvements and cost reductions would proceed linearly from the initial assumptions to midterm assumptions and then from the midterm assumptions to the commercially assumptions (see Table 3.5).

Before the curves could be put together, however, further assumptions had to be made regarding the speed with which GDH deployment would occur during each of the three phases. It was assumed that the initial learning phase would occur relatively quickly, lasting 5 years, during which time 1 city-wide GDH system would be installed each year. The strides made in technology during these early phases would be great. The next phase, the midterm development phase, would last much longer while the technology was perfected and kinks worked out, lasting for 15 years from years 6-20. During this time systems would be deployed at a rate of 2 per year. By the end of the learning and development phase, and estimated 35 city-wide GDH plants would have been be installed over the course of 20 years. This rate of deployment and technological advance outpaces that seen today and would thus require significant public and private investment and political willpower.

After 20 years, it was assumed the technology would have reached commercial maturity and that the rate at which systems were deployed would be limited only by the rate at which wells could be drilled and piping installed. For this it was assumed that 2 GW_{th} would be deployed each year until either all "places" had GDH or GDH was no longer cost-competitive. In the commercially mature case, a typical doublet system has a heating capacity of roughly 20 MW_{th}, meaning roughly 200 wells per year would have to be drilled to meet this deployment rate. This is a relatively modest drilling rate when compared to the nearly 1,500 Marcellus Shale gas wells that were completed in Pennsylvania alone in 2010.

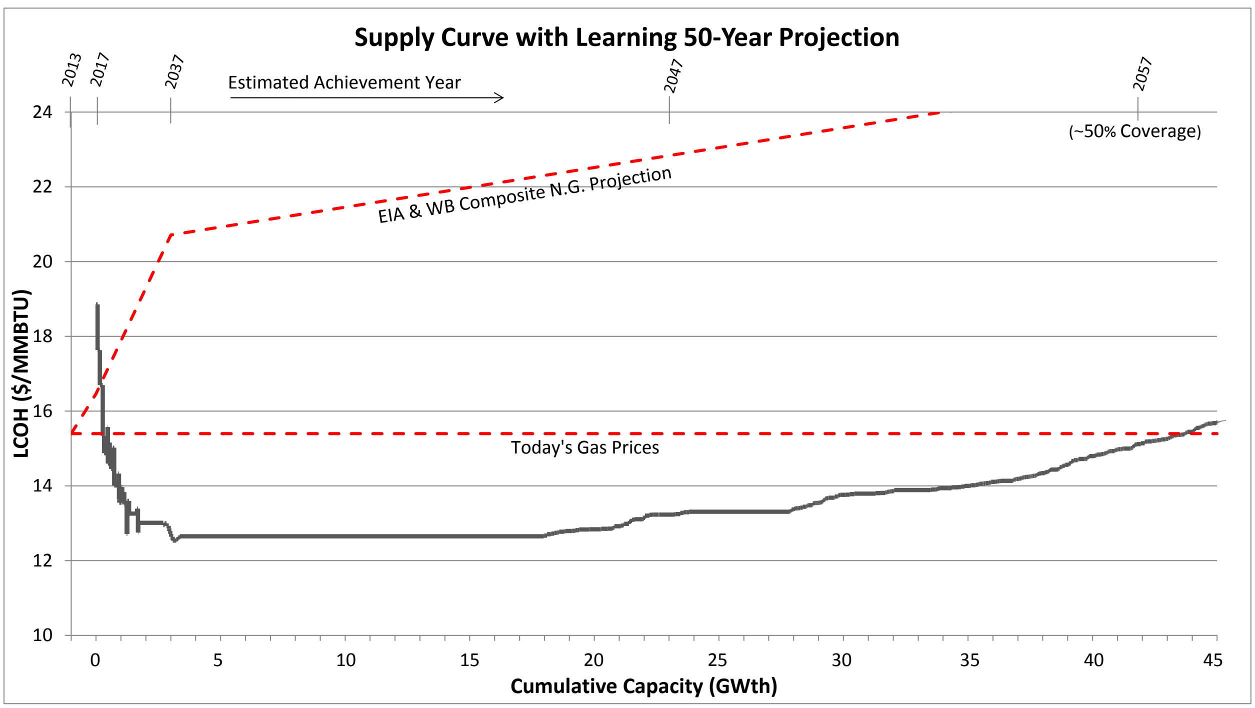


Figure 4.4 Projected supply curve and estimated year of achievement under the learning and deployment circumstances described in section 4.1.1. The grey line represents the projected supply curve for EGS district heating in NY and PA, while the red dashed lines represent the current and projected cost of heating with natural gas based on estimates from the Energy Information Administration and the World Bank. Note that the time scale on the top is nonlinear and is intended simply to mark estimated milestones.

The supply curve generated under the learning scenario described here is shown in Figure 4.4. The LCOH for GDH starts high, at the initial value and rapidly drops down to below with the current cost of heating with natural gas after a few short years of rapid learning. The LCOH at this point levels around \$13/MMBTU and then slowly begins to increase again as more systems are deployed and less favorable (albeit still favorable compared to conventional heating) sites are targeted. Also note that the first capacity does not come online until 2017. This is because of the 4-year building period assumed in the LCOH calculations, which creates a lag between when construction starts and when production begins 5 years later. By 2057, at least half of the total heating demand in New York and Pennsylvania could be met with clean, sustainable, cost-competitive GDH.

4.1.2 Comparison to Cost of Heating with Natural Gas

Obviously GDH projects will be constructed only if there is a customer base willing to adopt district heating and if suitable financing can be arranged. Without incentives or active regulatory intervention, GDH will only be adopted if it can produce and sell heat at a cost that can compete with other heating alternatives, which today is primarily natural gas. Figures 4.1b and 4.4 show the adjusted cost of heating with natural gas along with the GDH supply curves, and Figure 4.5 below shows a better picture of only the lowest-cost 5 GW_{th} alongside the cost of heating with natural gas. The cost of heating with natural gas was determined using the 2011-2012 residential and commercial prices for natural gas published by the Energy Information Administration (2012c) divided by the efficiency of a typical gas furnace, which was assumed to be 80%, to obtain an estimated adjusted cost of heating with natural gas (\$/MMBTU delivered to the air/water in the building heating system).

One can see from Figure 4.5 that there is a single place—DuBois, PA—with the potential to compete with natural gas, today (i.e. in the initial case), for *residential* consumers. However, this is misleading because that same place clearly cannot yet compete with the cost of heating paid by *commercial* natural gas consumers. Therefore, if GDH is constructed in DuBois, residential customers may well opt to connect to the system but commercial customers likely would not. If this happens, the overall GDH adoption rate will drop significantly and the LCOH that must be charged to those residential customers who did connect will necessarily increase

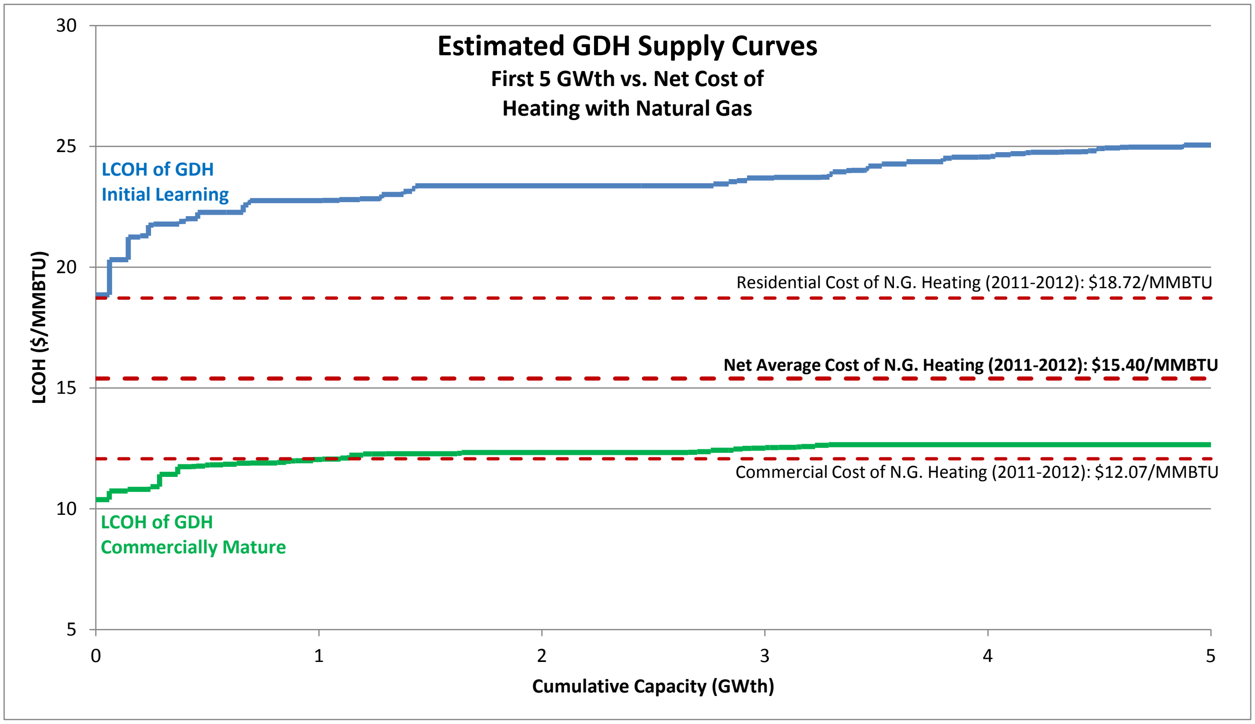


Figure 4.5 LCOH of the cheapest 5000 MW_{th} of GDH capacity versus the estimated cost of heating with natural gas in New York and Pennsylvania.

accordingly, potentially turning more residential customers away and further increasing the required LCOH. Hence it is important that GDH be able to compete with natural gas (which is the cheapest of all other alternative heating options including fuel oil and propane, and thus the primary competitor for GDH) for both residential *and* commercial consumers. (It is also important to note that all of the LCOH estimates in this analysis operate on the assumption of 100% adoption of GDH capacity where it is built.)

However, this does not mean that GDH has to be able to reach a LCOH lower than the commercial cost of natural gas. Instead one can compare the LCOH of GDH to the net average cost of residential and commercial natural gas heating (bold dashed line in Figure 4.5). If GDH can compete with this average cost, then in theory GDH could compete for both residential and commercial consumers by charging a lower rate to commercial consumers that is paid for by charging a higher rate to residential consumers – what is called a cross-subsidized tariff. As long as the LCOH from GDH is near or below the net average cost of heating with natural gas, then an intelligent rate structure can be used to ensure the highest adoption rates from both residential and commercial consumers. Additionally, if natural gas prices escalate in the near future, as many experts believe they will (e.g. the EIA and the World Bank, as shown in Figure 4.4), then the attractiveness of GDH will increase measurably and may soon be competitive even with today's young technology.

It is clear that under the initial phase assumptions with current gas prices, even the most economically attractive GDH systems are still unlikely to compete with natural gas heating, a finding echoed by Rafferty (2003) who points out that for small (residential) buildings, "the prospects for competing with natural gas appear unfavorable in all cases. Clearly, other incentives (beyond energy cost savings) are required for the connection of small buildings to district systems."

However, the initial learning phase results for geothermal *district heating* presented here are closer to being competitive with available alternatives than base-case results for EGS *electricity* supply-curves (e.g. Augustine et al. 2010, Augustine 2011). In the GDH results here, the first 5 GW_{th} of cumulative GDH capacity for the base-case are only 20-65% higher than comparative costs of heating with natural gas – within sight of being competitive. On the other hand, studies evaluating geothermal electricity production (rather than district heating) found that the first 5 GW_e of EGS electricity generation capacity has LCOE's from 27-36¢/kWh (Augustine et al. 2010, Augustine 2011) – roughly 200-500% higher than comparative costs of electricity in the United States. Hence it appears that, at least *with today's costs and technology*, *EGS district heating is much closer to being economically-competitive than EGS electricity production*. **This suggests that considerations of geothermal energy should begin to focus more on the future of geothermal district heating and co-generation rather than focusing so heavily on electric power production.**

Looking at the commercially mature case, it is clear that GDH can compete across the board even with today's low natural gas, potentially saving billions of dollars in annual heating expenses in New York and Pennsylvania alone (assuming at least 50% adoption of GDH). If gas prices increase as expected, then the savings with GDH could be even greater.

4.2 Uncontrollable Factors

4.2.1 Effects of Population on LCOH

As expected population has a very strong effect on the minimum LCOH of a place. Figure 4.6 illustrates this effect. It is clear that places with very low population have higher LCOHs from GDH while places with higher population have lower LCOHs. This can be explained because places with a very low population may not have enough cumulative demand to fully utilize even a single GDH plant, resulting in wasted generation capacity and decreases capacity factors.

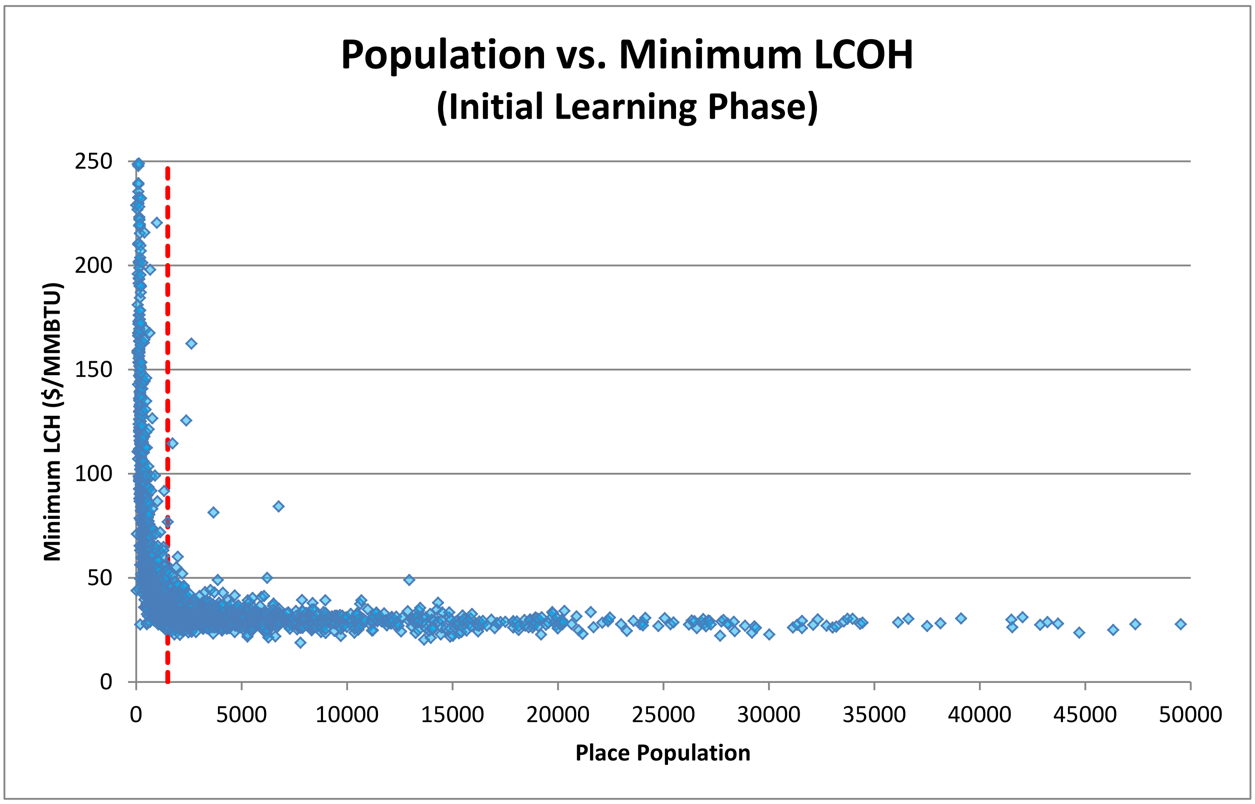


Figure 4.6 Population against minimum LCOH for each place. Population threshold of 1500 shown by red dashed line. Note that several places with populations above 50000 or LCOHs greater than $250/MMBTU are not shown.

Above a certain threshold, however, increased population does not continue to correlate with decreased LCOHs. A population threshold of around 1500 can be applied to determine the effect of increasing population. For places with populations below 1500 the average LCOH is \$77.74/MMBTU, while for places with populations greater than 1500 the average LCOH is \$31.42/MMBTU, with a Student T-Test p-value $\approx 10^{-102}$ (**generally for a one-sided test p-values < 0.10 mean an effect is statistically significant**). However, above this 1500 person threshold, linear regression suggests that the effect of population on LCOH is relatively flat (coefficient roughly -10^{-6}, $p = 0.20$). The high p-value implies that population has no significant effect on LCOH beyond 1500 people. This suggests that population can provide a minimum threshold for eliminating places with potentially high GDH LCOHs, but it cannot provide much insight beyond that.

4.2.2 Effects of Population Density

Figure 4.7 shows population density versus minimum LCOH for each census place. As with population, a qualitative visual analysis shows that very low densities (less than roughly 500 persons/km^2) tend to yield higher LCOHs. At population densities of less than 500 persons/km^2 the average LCOH is \$65.28/MMBTU, while the average LCOH when density is greater than 500 persons/km^2 is \$30.82/MMBTU ($p \approx 10^{-83}$).

Unlike with absolute population, however, (i.e. where correlation ceased at the population threshold of 1500 people) the trend of decreasing LCOH with increasing population density continues past this initial qualitative visual turning point, up to a threshold population density of about 1000 persons/km^2. Below this threshold, population density continues to be weakly correlated with decreasing LCOH (coefficient -0.0026, $p \approx 10^{-5}$). Beyond this threshold, however, population density ceases to correlate with lower LCOHs (coefficient -5.6e-4, p = 0.14). Hence increasing population density tends to yield lower LCOHs, up to a threshold of about 1000 persons/km^2, at which point density no longer has much effect on LCOH.

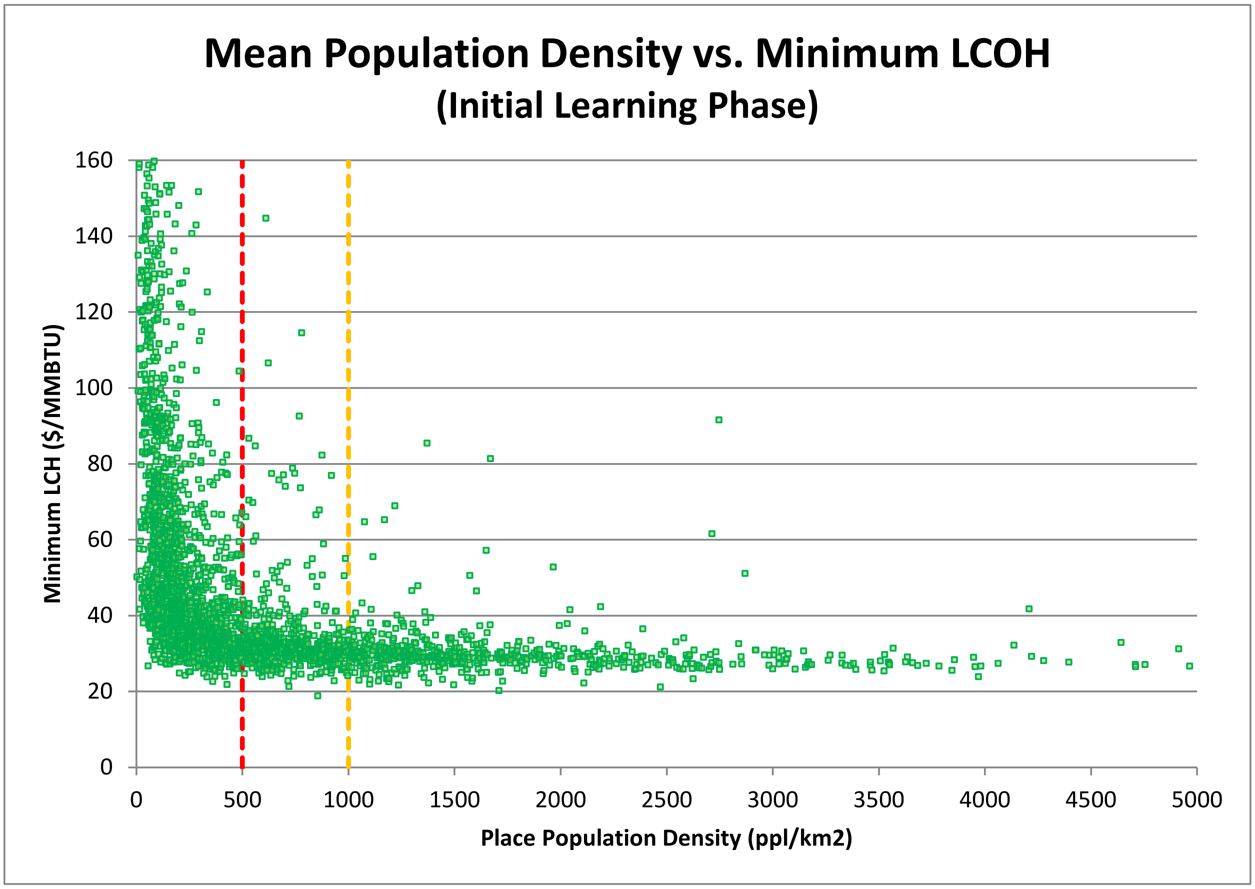


Figure 4.7 Mean population density versus minimum LCOH. Density thresholds of 500 and 1000 shown by red and orange dashed lines, respectively.

4.2.3 Effect of Geothermal Gradient

Figure 4.8 shows the distribution of geothermal gradients in the dataset. Recall that all "places" that lie outside the extent of the original resource map (i.e. Figure 2.3) were assigned the spatial average of the gradient – 24.15°C/km. These places accounted for 1146 of the 2894 "places," or nearly 40% of the total dataset. For the distribution shown in Figure 4.8, these "places" have been removed so as to avoid skewing the distribution. What remains is the distribution of gradient values among the "places" for which a real estimate of gradient exists. The lowest gradient for a single place in the dataset was 15.24°C/km. The distribution follows a fairly normal distribution up to the average gradient across the dataset of 24.21°C/km (note that this is different than the *spatial* average since the spatial distribution of towns across the map is not necessarily uniform). The distribution appears to have a slight tail as gradient increases, suggesting that high gradients are possible though unlikely. Gradient tailed off regularly up to a peak at 37.53°C/km. Beyond this there was a single place with an unusually high gradient – 47.32°C/km – that was omitted from this analysis of the effects of gradient on LCOH as it represented a single outlier that may skew the dataset. The single lowest gradient was also omitted from this analysis to compensate.

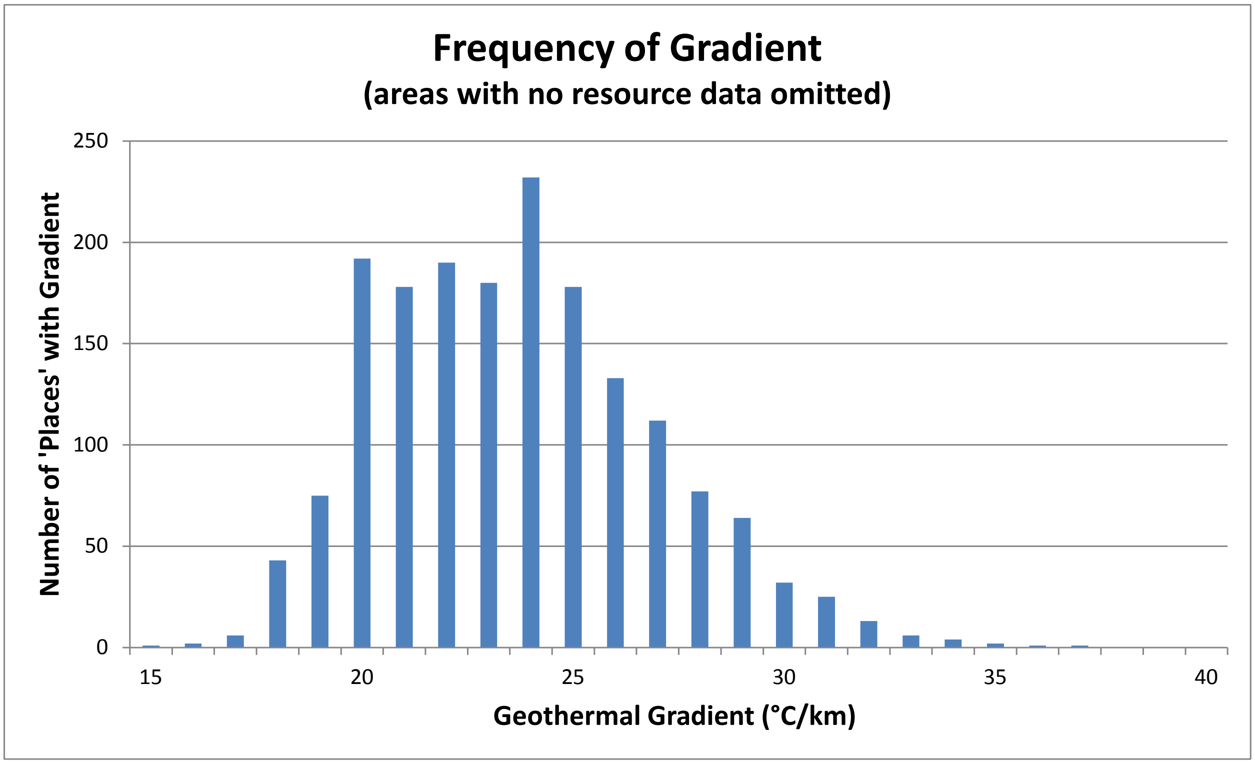
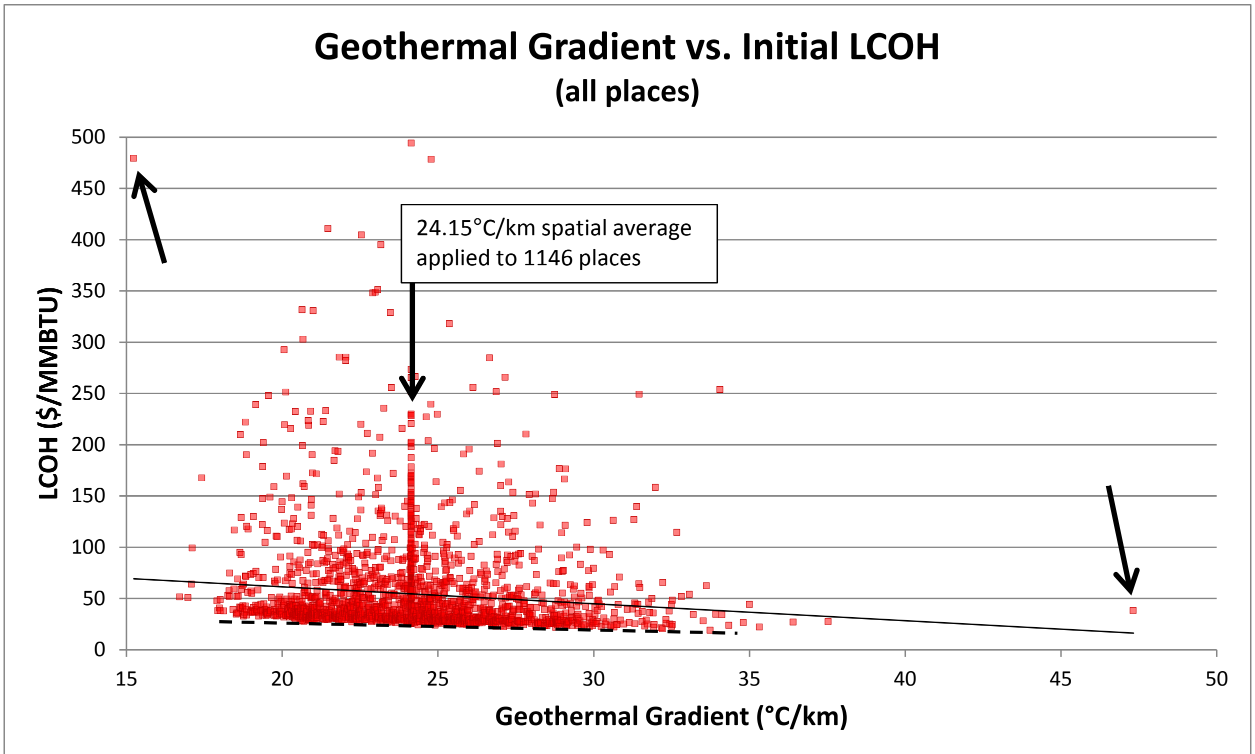


Figure 4.8 The distribution of gradient values across all "places" in the dataset. Note the tail at the high end of the distribution. Also note that nearly 40% of the dataset for which resource data did not exist is also not included in this distribution.

One would expect that the geothermal gradient has a strong effect on the LCOH for a given GDH system, with higher gradients leading to lower LCOHs. Figure 4.9 plots geothermal gradient against LCOH (initial case) for both the entire dataset (4.9a) and for the remaining 1746 places in the dataset after the 1146 with no resource data and the 2 outliers have been removed. In either case there is a statistically significant inverse correlation between higher gradients and lower LCOHs (coefficient ≈ -1.5, p-value = 0.0017 with outliers removed).



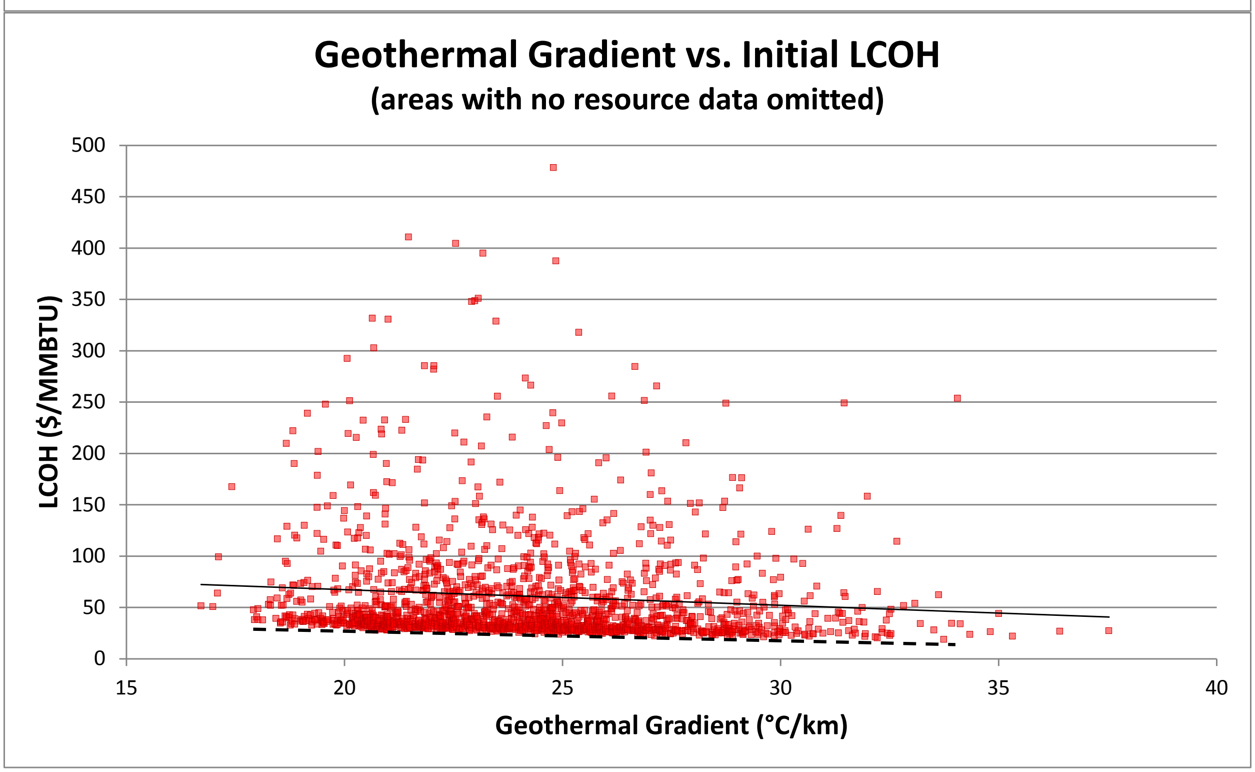


Figure 4.9 Geothermal gradient versus LCOH (initial case) for all places in the dataset (top, 4.9a) and for remaining 1746 "places" after removal of the indicated outliers (bottom, 4.9b). There is a trend between increased gradients and decreased LCOHs. The solid line represents a simple regression with p-values of 0.0005 and 0.0017. Also note the absolute lower bound gradient places on minimum possible LCOH (dashed line).

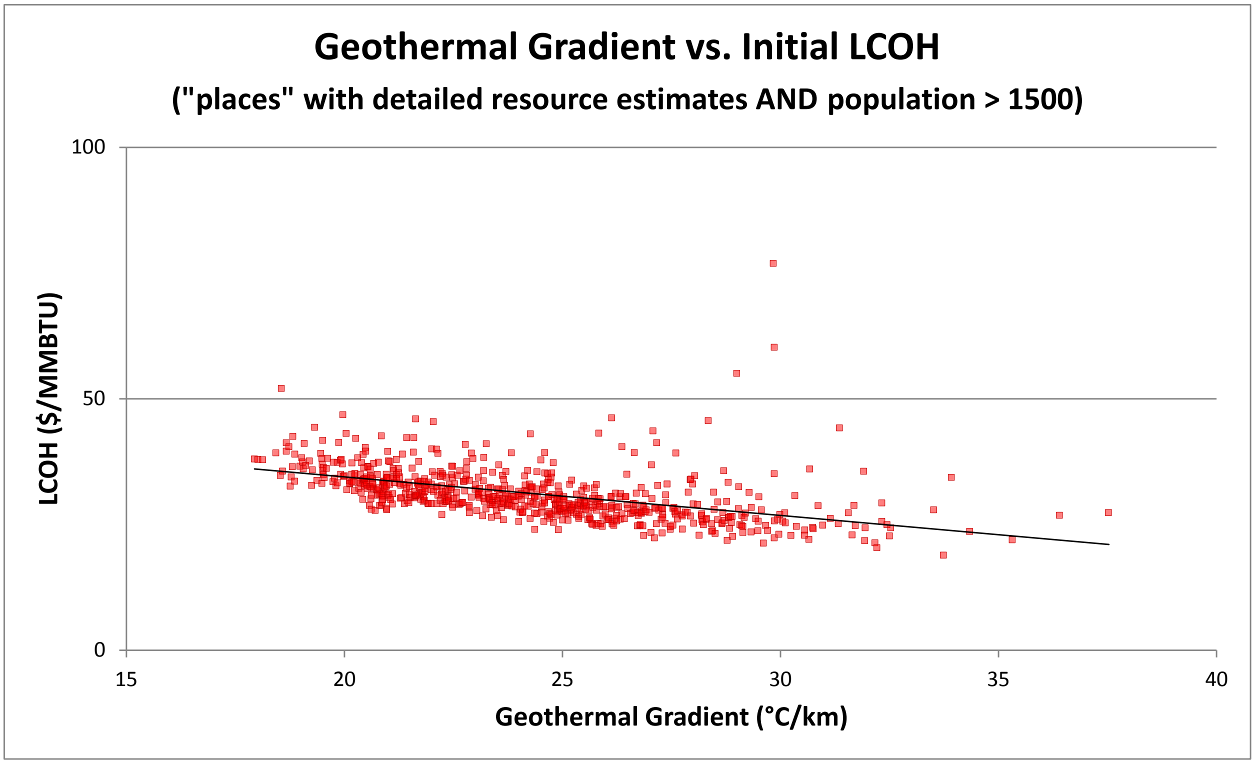


Figure 4.10 Geothermal gradient vs. LCOH for only places that fall within the extent of the original resource estimate AND that have populations in excess of the 1500 person threshold identified in section 4.2.1. By eliminating "places" with populations below 1500, the confounding effects of low population could be eliminated and the clearest picture of the correlation between gradient and LCOH obtained. The solid line represents a linear regression with correlation coefficient of -0.767 and a p-value of -10^{-29}.

Also of interest is the apparent limit that geothermal gradient places on the absolute minimum LCOH that can be reached, represented by the dashed lines in Figure 4.9. It is clear from this line that the lowest possible LCOHs coincide with higher gradients. Hence while higher geothermal gradients may *permit* lower LCOHs they do not necessarily always result in lower LCOHs; there are clearly other factors than gradient at work in determining the LCOH from GDH in a given place (e.g. population density).

As noted in section 4.2.1, population has one of the strongest effects on LCOH for small towns with fewer than 1500 residents. In order to eliminate the effects of low population and focus only on gradient effects, all "places" with a population of less than the identified threshold were removed from the already limited dataset of 1746 "places" (i.e. as shown in Figure 4.9b). This resulted in a still smaller data subset of only 690 "places" for which both gradient estimates exist *and* population is in excess of 1500 people. This subset is plotted in Figure 4.10 and it shows, free of any confounding population effects, the clearest correlation between increased gradient and decreased LCOHs. The correlation coefficient of the linear regression pictured is -0.767 and the p-value is 10^{-29}.

4.2.4 Effect of Climate

Figure 4.11 shows LCOH plotted against the mean annual and January minimum temperatures at each place for the entire dataset. Note the surprising downward trend suggesting that warmer places actually correlate with lower LCOHs – one would expect just the opposite. However, in sections 4.2.1 and 4.2.3 two factors were identified that have a very strong effect on LCOH – population and gradient. It is very likely that one or both of those variables is confounding the results observed here.

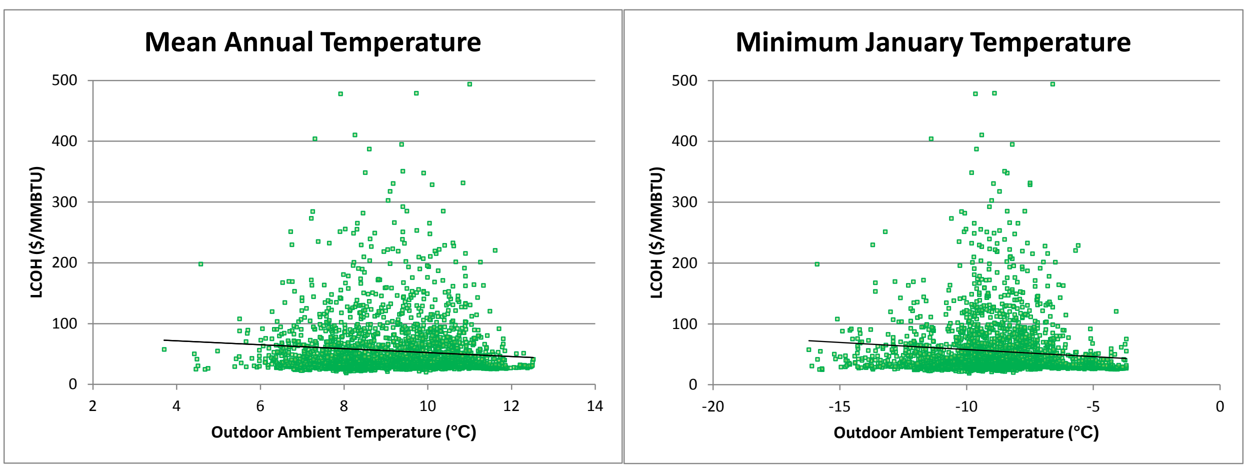


Figure 4.11 LCOH vs. outdoor ambient temperatures for all 2894 places.

In order to cut through that noise and ascertain the true effect of climate on LCOH, the dataset was manipulated in two ways. First, to account for the effect of population, all "places" with a population of less than the 1500 person threshold were removed from the dataset (as was done in the analysis of geothermal gradient in section 4.2.3) so that only places with populations above 1500 people (at which point population has zero noticeable effect on LCOH) were left. Second, to adjust for the strong effect of gradient, all LCOHs were normalized to an arbitrary constant gradient (chosen as the spatial average – 24.15°C/km) by determining the difference of gradient at each "place" from the chosen normal, multiplying this difference by the regression slope shown in Figure 4.10, and subtracting it from the calculated LCOH. In this way the effect of geothermal gradient on LCOH could be minimized.

Once this was done the data was re-plotted as shown in Figure 4.12. From this figure it appears that outdoor ambient temperature has little to no effect on LCOH – at least no statistically significant effect (p-values for the regressions shown are 0.27 and 0.93 for the mean annual temperature and minimum January temperatures, respectively).

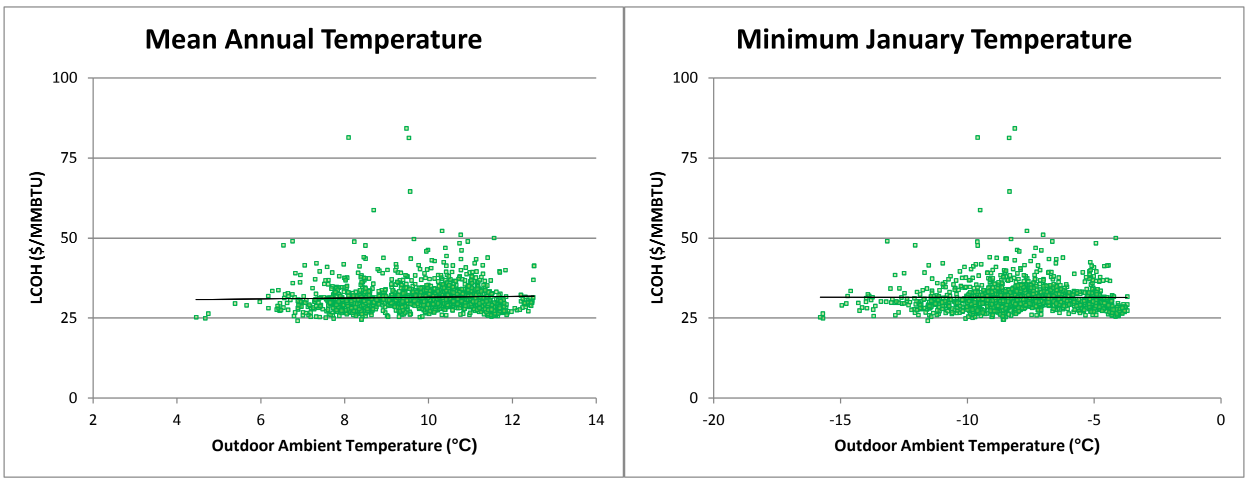


Figure 4.12 LCOH plotted against outdoor ambient temperature with populations below the 1500 person threshold removed and LCOH normalized to a constant gradient. It appears as though outdoor ambient temperature has little to no effect on LCOH.

However, perhaps it is not the average outdoor temperature that influences LCOH but rather the magnitude of temperature fluctuations (i.e. the amplitude of the annual temperature curve). For example a place with short, cold winters and long, hot summers would have very high heating demand for only a few months out of the year and thus have a low capacity factor (and higher LCOHs) compared to a place with a more consistent and mild climate with smaller seasonal variation. In order to determine the effects of this seasonal variation, LCOH was plotted against the difference between the mean annual temperature and January minimum temperature at each "place." This is shown in Figure 4.13.

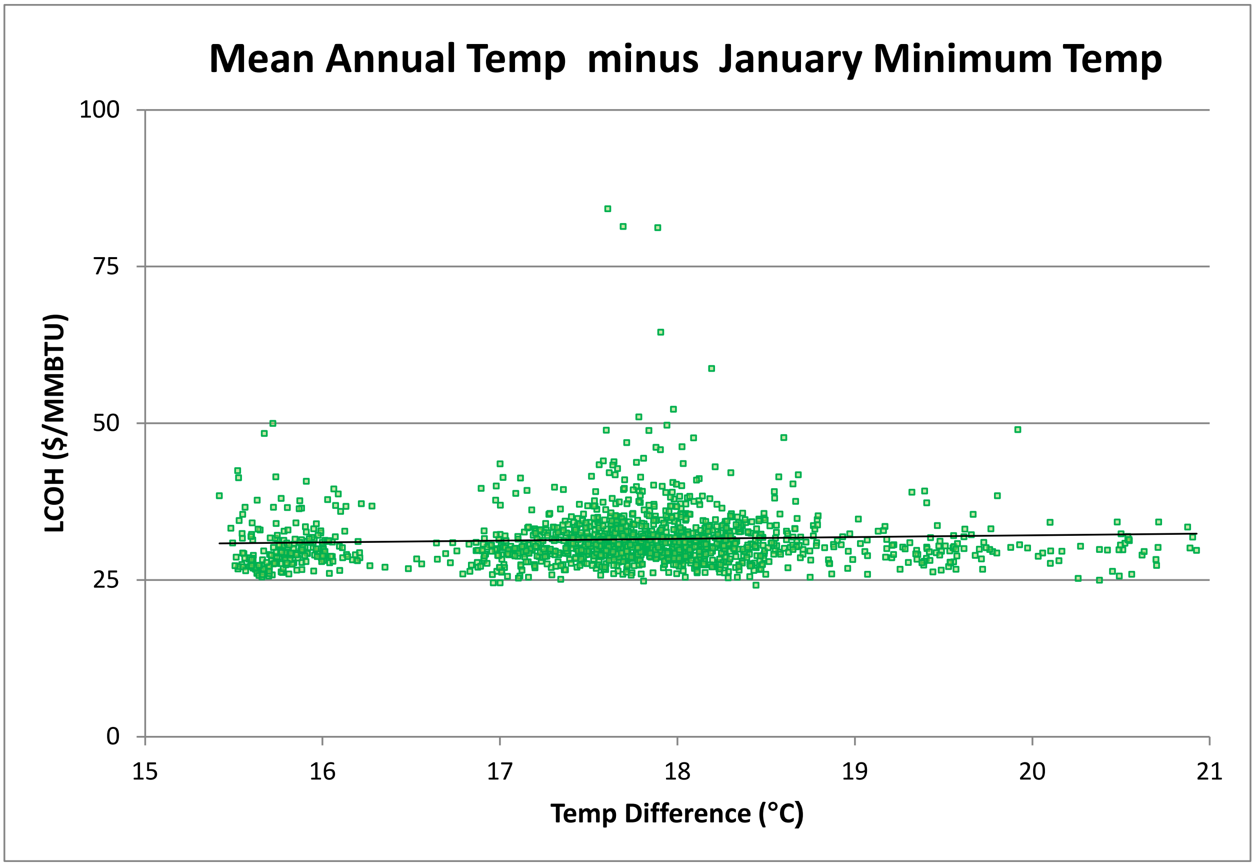


Figure 4.13 Gradient-normalized LCOH plotted against the difference between the mean annual temperature and minimum January temperature for each "place" with a population greater than 1500 people. There is a weak but statistically significant correlation between larger seasonal temperature fluctuations and higher LCOHs (regression coefficient = 0.28, p-value = 0.09).

It appears as though there is a very weak correlation between larger temperature fluctuations and higher LCOHs – suggesting that perhaps the effect of climate on LCOH is controlled not by the absolute outdoor ambient air temperature but rather by the magnitude of seasonal fluctuations in temperature. It is true that places with colder average temperatures will likely have more total heating demand and thus require more EGS wells to support their GDH networks. However, this should not affect the LCOH associated with each doublet system. Rather it is the magnitude of change from peak winter demand to low summer demand (and hence the magnitude of temperature fluctuations) that will affect LCOH. This is likely because GDH systems were modeled based on the minimum January temperature as the peak design conditions. This means that places with smaller annual fluctuations from this design condition will achieve higher overall capacity factors and hence will be able to realize lower LCOHs. However, though this climatic control is statistically significant, it should only be considered a marginal effect compared to the much stronger effects of population and geothermal gradient.

4.3 Variable Sensitivity

In order to determine the sensitivity of the model to each of the user-defined inputs and ensure that the model is not overly-dependent on any single variable, several simulations were run by varying a single variable from the base-case. This analysis also served to help identify opportunities for reducing the cost of GDH in New York and Pennsylvania by identifying the few variables that have the most influence on LCOH and thus hold the potential to provide the biggest return on research and development investment.

The analysis was carried out by adjusting 11 input variables by a known percentage (either ±20% and ±40% or ±25% and ±50%) and analyzing how that change affected the resulting LCOH. This was done on a small subset of the overall dataset, looking at only the 200 places with the lowest LCOHs and hence the most promise for GDH. This was done twice—once for the Initial case and once for the Commercially Mature case. Figures 4.14 and 4.15 provide a summary of the sensitivity results for the Initial case and Commercially Mature case, respectively, and Tables 4.2 and 4.3 provide the respective variable values that were examined. Each variable is discussed in more detail in sections 4.3.1 through 4.3.9.

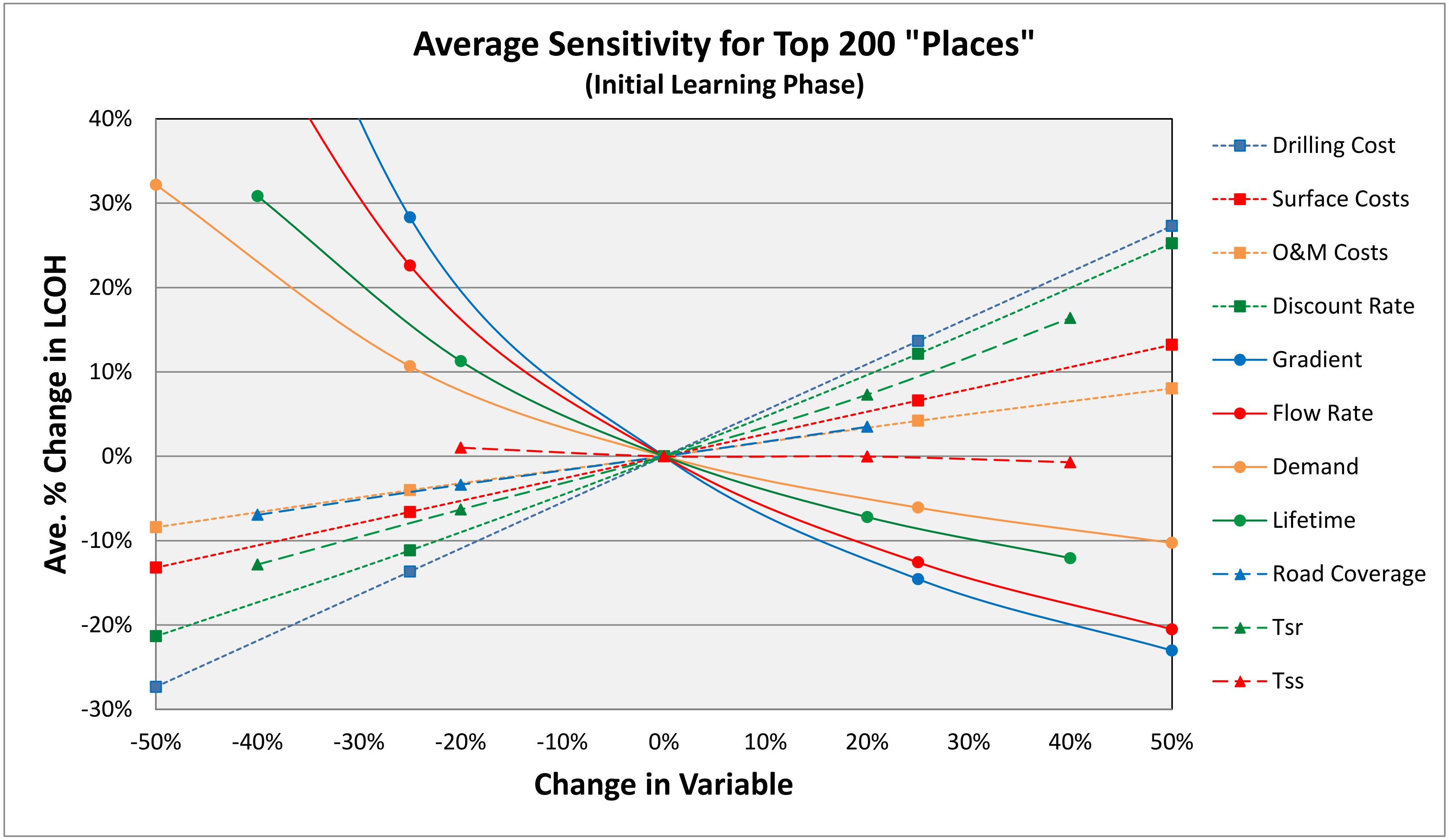


Figure 4.14 Average sensitivity of LCOH to 11 major variables under the initial case assumptions. Of these variables, all but the geothermal gradient are within the control of engineers and researchers to some degree and thus represent potential R&D opportunities for reducing the LCOH associated with EGS district heating. Note that gradient, drilling cost, and flow rate have the largest effect on LCOH. Thus the most effective ways to lower LCOHs for GDH are to minimize drilling costs, maximize flow rates, and locate the highest gradients possible. R&D dollars should thus be spent on research drilling technology, enhancing reservoir flow rates, and assessing geothermal resources and locating hotspots.

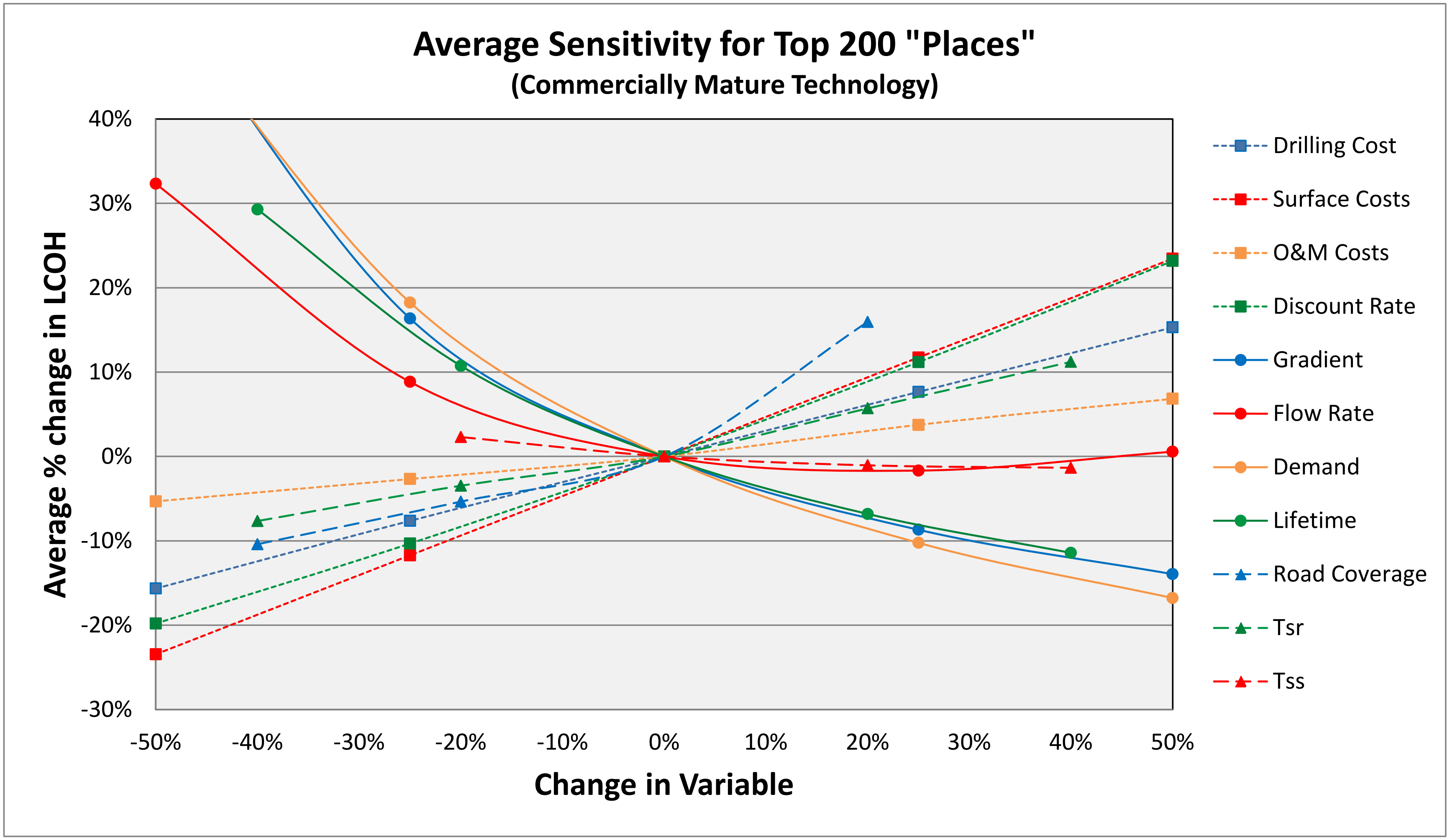


Figure 4.15 Average sensitivity of LCOH to 11 major variables under the commercially mature technology assumptions. Note that the strength of the effect of surface costs and drilling costs have switched from the initial case and that now surface costs more strongly affect LCOH. Also note the diminishing returns from increasing flow rates beyond the mature value of 80 kg/s (in fact increasing flow rates beyond 100 kg/s actually leads to higher LCOHs). Finally, note the strong but inverse effect of demand on LCOH – that is, reduced demand leads to higher LCOHs. All of these issues are discussed in detail in the sections that follow.

Table 4.2 Variable values tested for the sensitivity analysis carried out under the initial case assumptions. For variables that differed for each place (i.e. drilling costs, surface costs, O&M costs, demand, and gradient) a simple multiplier was applied to the initial calculated values ranging from 0.50 to 1.50.

Variable	-40/50%	-20/25%	Initial Base	+20/25%	+40/50%
Drilling Costs	50% base	75% base	**100% of base**	125% base	150% base
Surface Costs	50% base	75% base	**100% of base**	125% base	150% base
O&M Costs	50% base	75% base	**100% of base**	125% base	150% base
Discount Rate	2%	3%	**4%**	5%	6%
Flow Rate	15 kg/s	22.5 kg/s	**30 kg/s**	37.5 kg/s	45 kg/s
Demand	50% base	75% base	**100% of base**	125% base	150% base
Lifetime	18 years	24 years	**30 years**	36 years	42 years
Road Coverage	45%	60%	**75%**	90%	---
Tss	---	56°C	**70°C**	84°C	98°C
Tsr	24°C	32°C	**40°C**	48°C	56°C
Gradient*	50% base	75% base	**100% of base**	125% base	150% base

Table 4.3 Variable values tested for the sensitivity analysis carried out under the commercially mature technology assumptions. Note that the percentage multipliers are given as a percentage of the initial base case value (i.e. the base case assumption is that drilling costs for the mature case will be 85% of what they are for the initial case - varying this by ±25% yields 85% x 0.75 = 63.75% and 85% x 1.25 = 106.25% of the initial base case).

Variable	-40/50%	-20/25%	Mature Base	+20/25%	+40/50%
Drilling Costs	42.5% initial base	63.75% initial base	**85% of initial**	106.25% initial base	127.5% initial base
Surface Costs	45.0% initial base	67.5% initial base	**90% of initial**	112.5% initial base	135.0% initial base
O&M Costs	45.0% initial base	67.5% initial base	**90% of initial**	112.5% initial base	135.0% initial base
Discount Rate	2%	3%	**4%**	5%	6%
Flow Rate	40 kg/s	60 kg/s	**80 kg/s**	100 kg/s	120 kg/s
Demand	50% base	75% base	**100% of base**	125% base	150% base
Lifetime	18 years	24 years	**30 years**	36 years	42 years
Road Coverage	45%	60%	**75%**	90%	---
Tss	---	40°C	**50°C**	60°C	70°C
Tsr	18°C	24°C	**30°C**	36°C	42°C
Gradient*	50% base	75% base	**100% of base**	125% base	150% base

4.3.1 Well Flow Rate

Apart from the geothermal gradient, production well flow rate is capable of having the single largest impact on LCOH. Figure 4.16 and Table 4.4 illustrate the results of all well flow sensitivity analyses. Note, however, that the benefits to LCOH from increases in well flow rate appear to decay in a manner similar to exponential decay as flow rate increases. Hence while flow rate can have the largest effect on LCOH of any engineered variable, it is only when flow rate decreases below what is assumed as the initial base case value. This can be seen in Table 4.4 by the fact that a 50% reduction in flow rate in the initial case actually results in a 71.6% increase in LCOH – the change to LCOH exceeds the magnitude of the change to the variable itself! Hence it is clear that ensuring production flow rates do not drop below 30 kg/s is crucial to keep GDH LCOHs down. On the other hand, increasing flow rates during the initial learning phase indeed has a very significant positive effect on LCOH and is likely well worth the investment. Figure 4.14, however, suggests that reducing drilling costs may be able to yield even greater reductions in LCOH.

Looking at the commercially mature case, the diminishing returns of increased flow rate become even more apparent. When flow rates are already at an impressive 80 kg/s, increasing the flow rate by an additional 25% yields only a very slight benefit to LCOH: a mere 1.7% drop—hardly worth the added R&D costs required to achieve the extra 20 kg/s. Increasing flow rates still further actually has the effect of *increasing* LCOH. This is likely a result of the combined needs for larger piping, larger heat exchangers, and significantly more pumping energy. These results all suggest that there is in fact an optimal flow rate that achieves the lowest possible LCOH somewhere between 80 and 100 kg/s. However, the marginal improvements to LCOH beyond 80 kg/s—and indeed perhaps even beyond 60 kg/s—may not be worth the research investment required and thus R&D dollars may be better spent elsewhere (e.g. reducing surface and drilling costs or increasing lifetime).

Table 4.4 Effects of changes to the maximum flow rates from EGS wells for the initial and commercially mature technology cases.

	Change in LCOH Due to Changes in Well Flow Rate				
	-50% BASE	**-25% BASE**	**BASE CASE**	**+25% BASE**	**+50% BASE**
Initial Case	**15 kg/s**	**22.5 kg/s**	**30 kg/s**	**37.5 kg/s**	**45 kg/s**
Average:	+71.6%	+22.6%	-	-12.6%	-20.5%
Maximum:	+89.3%	+28.2%	-	-15.6%	-26.1%
Minimum:	+39.9%	+9.1%	-	-5.1%	-4.8%
Ave. $ change:	+$18.25/MMBTU	+$5.77/MMBTU	-	-$3.20/MMBTU	-$5.22/MMBTU
Mature Case	**40 kg/s**	**60 kg/s**	**80 kg/s**	**100 kg/s**	**120 kg/s**
Average:	+32.3%	+8.8%	-	-1.7%	+0.6%
Maximum:	+40.9%	+13.0%	-	-5.3%	-5.6%
Minimum:	+15.0%	+3.0%	-	+2.7%	+7.1%
Ave. $ change:	+$4.26/MMBTU	+$1.16/MMBTU	-	-$0.22/MMBTU	+$0.08/MMBTU

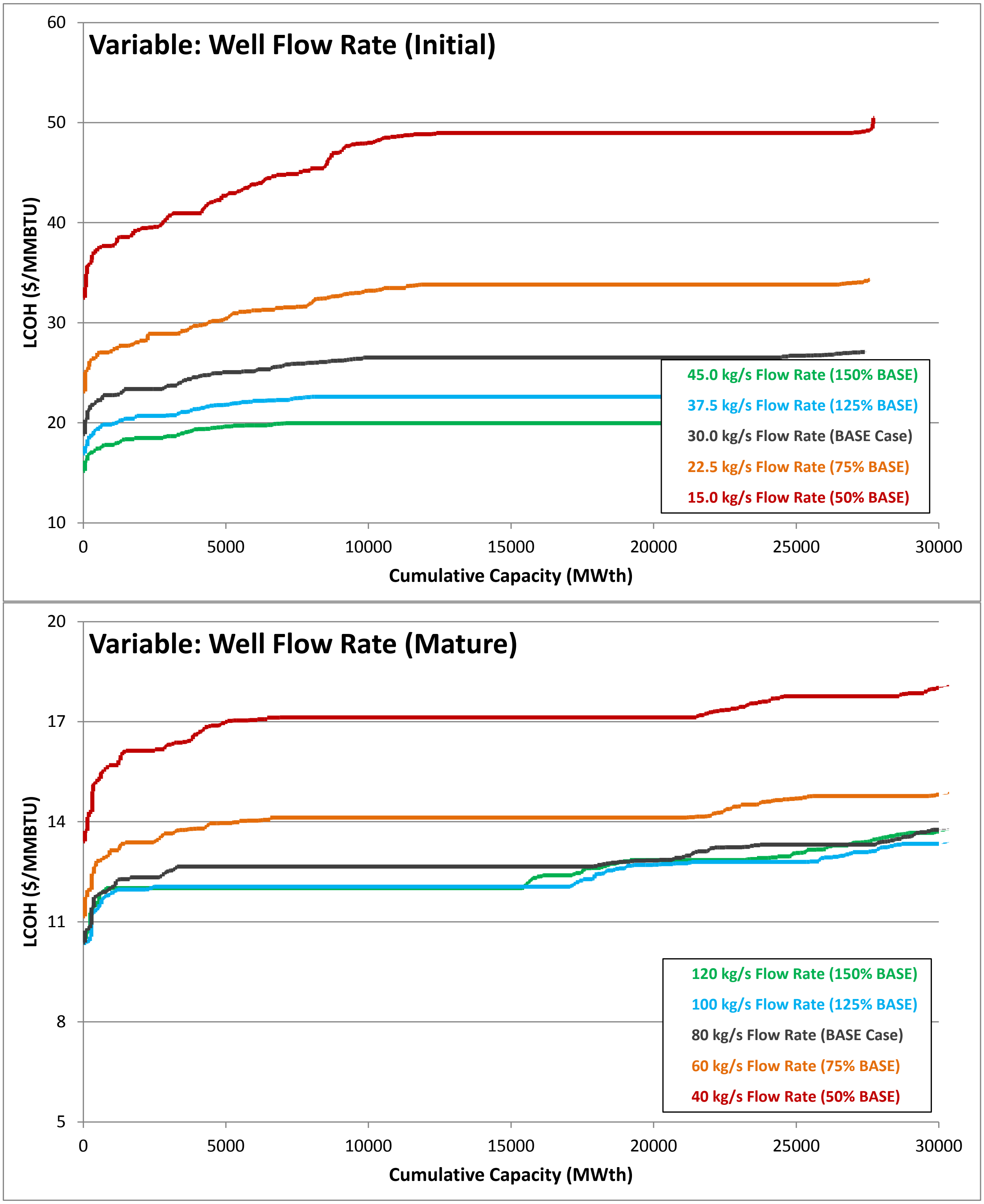


Figure 4.16 Supply curves showing the 200 "places" with the lowest LCOHs (first ~30 GW_{th}) for both the initial and mature cases given variations in well flow rate. All other inputs remain the same as they were for the initial and mature base cases, respectively. Note the different scales. In the initial case LCOHs range from ~$15-50/MMBTU while for the mature case LCOHs range only from ~10-18/MMBTU.

4.3.2 Drilling Cost

Drilling and completion costs were varied by applying a simple scalar multiplier to the drilling and completion (i.e. stimulation) costs calculated by GEOPHIRES. The results of these simulations are shown in Table 4.5 and Figure 4.17. In the initial case, drilling cost presents the single largest potential opportunity to reduce the LCOH of GDH—a 27.3 % reduction on average if drilling costs can be reduced by 50%.

The high returns to LCOH from improvements to drilling cost are indicative of the high proportion of total system cost for which drilling accounts. The three component costs in the LCOH calculation, as explained in section 3.4.2 are drilling capital, surface capital, and annual operating and maintenance expenses. Because a 50% reduction in drilling costs results, on average, in a 27.3% reduction in LCOH, drilling costs must account for 0.273/0.50 = 54.6% of the total LCOH of a given system, on average. The direction of change in drilling cost does not matter, as it appears to be a fairly linear relationship. The fact that uniform change in LCOH is not observed (i.e. the maximum and minimum change are not the same in Table 4.5) is attributable to the fact that GDH systems in different places will have different geothermal gradients (requiring different drilling depths, e.g. see Augustine 2011, Figure 18) and will cover different density areas (requiring different network densities).

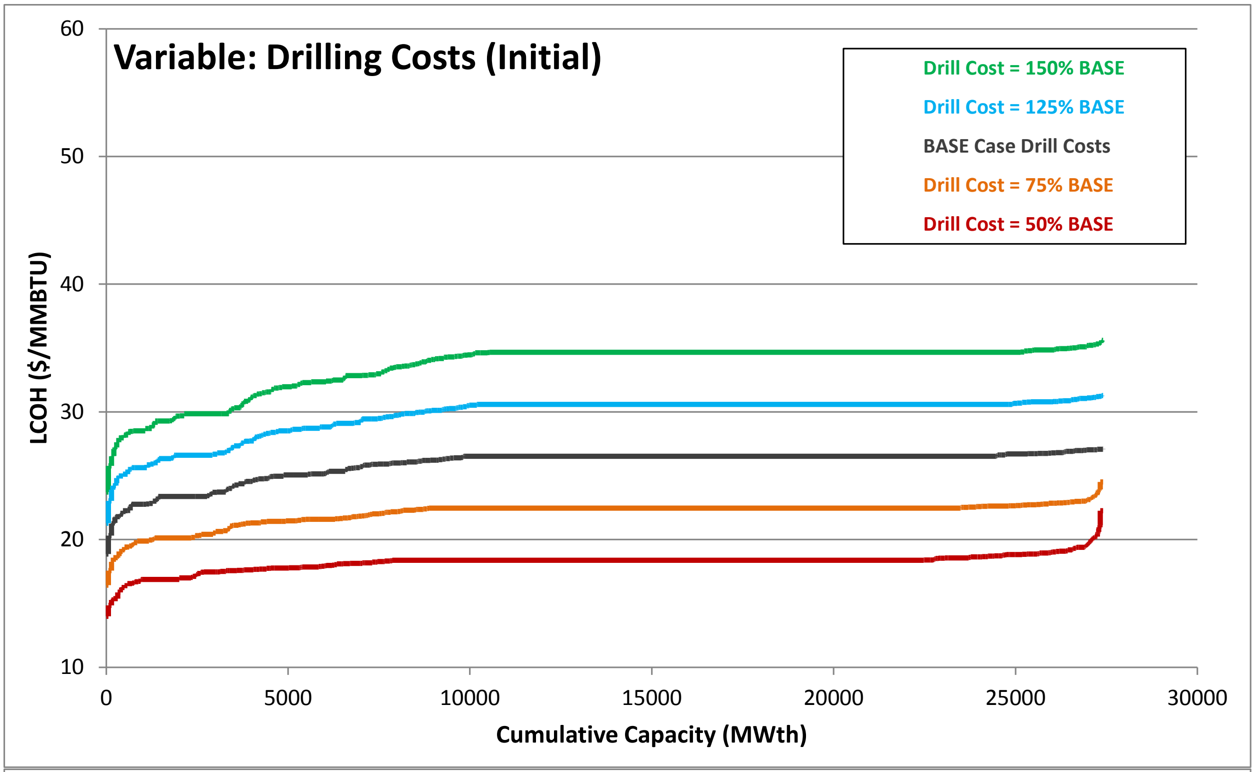
The immense influence of drilling cost on the LCOH of GDH in the initial case suggests that drilling costs are the best place to focus efforts at reducing the cost of geothermal district heating. This is expected as Augustine (2011) suggested that R&D efforts focused on reducing drilling costs would also have the largest effect on LCOE's for EGS power generation. Additionally, reductions in drilling cost for a given GDH system do not necessarily have to come from advances in drilling technology—they may results simply from finding the highest local gradient (and thus reducing required drilling depth) or improving well flow rates (and thus reducing the overall number of wells required). This compounding effect is likely why gradient and flow rate are also observed to have such large effects on LCOH.

Looking at the commercially mature technology case, one will observe that the effect of drilling cost on LCOH appears to have been significantly reduced. In fact, comparing Figure 4.14

Table 4.5 Effects of changes to the drilling costs for EGS wells for the initial and commercially mature technology cases.

	Change in LCOH Due to Changes in Drilling Costs				
	-50% BASE	**-25% BASE**	**BASE CASE**	**+25% BASE**	**+50% BASE**
Initial Case	**50% initial**	**75% initial**	**100% initial**	**125% initial**	**150% initial**
Average:	-27.3%	-13.7%	-	+13.7%	+27.3%
Maximum:	-32.6%	-16.3%	-	+16.3%	+32.6%
Minimum:	-16.9%	-8.4%	-	+8.4%	+16.8%
Ave. $ change:	-$6.97/MMBTU	-$3.49/MMBTU	-	+$3.48/MMBTU	+$6.97/MMBTU
Mature Case	**42.5% initial**	**63.75% initial**	**85% initial**	**106.25% initial**	**127.5% initial**
Average:	-15.7%	-7.6%	-	+7.7%	+15.3%
Maximum:	-20.4%	-10.0%	-	+11.3%	+19.9%
Minimum:	-9.4%	-4.6%	-	+4.6%	+9.1%
Ave. $ change:	-$2.06/MMBTU	-$1.01/MMBTU	-	+$1.01/MMBTU	+$2.02/MMBTU

and Figure 4.15, it appears that drilling costs and surface infrastructure costs have almost switched positions, with surface costs now presenting the largest opportunity for LCOH reduction. The reason for this is because of the increased well flow rates assumed for the commercially mature technology case. With the low flow rates of the initial case (30 kg/s) and a maximum system-wide ΔT of 65°C, a single EGS doublet system is capable of producing around 7 MW_{th} at peak. When flow rates are increased to 80 kg/s, as they were for the commercially mature case, that same doublet is now able to produce around 20 MW_{th} – a nearly threefold increase. This increase in available power from each well means that a single doublet can now satisfy three times the heating demand and serve three times as many customers, requiring three times as much piping to reach all those customers and three times the retrofit cost. While the surface costs associated with a single doublet have thus increased, the cost of drilling those two wells remains constant, meaning the ratio of surface to drilling cost has increased dramatically and surface infrastructure costs now account for more of total LCOH than drilling costs. Final LCOH is observed to drop from the initial to the mature case because fewer total doublets are now required. Thus the effect of increasing flow rate is really to reduce the number of wells required, and thus the aggregate drilling cost, to serve an area.



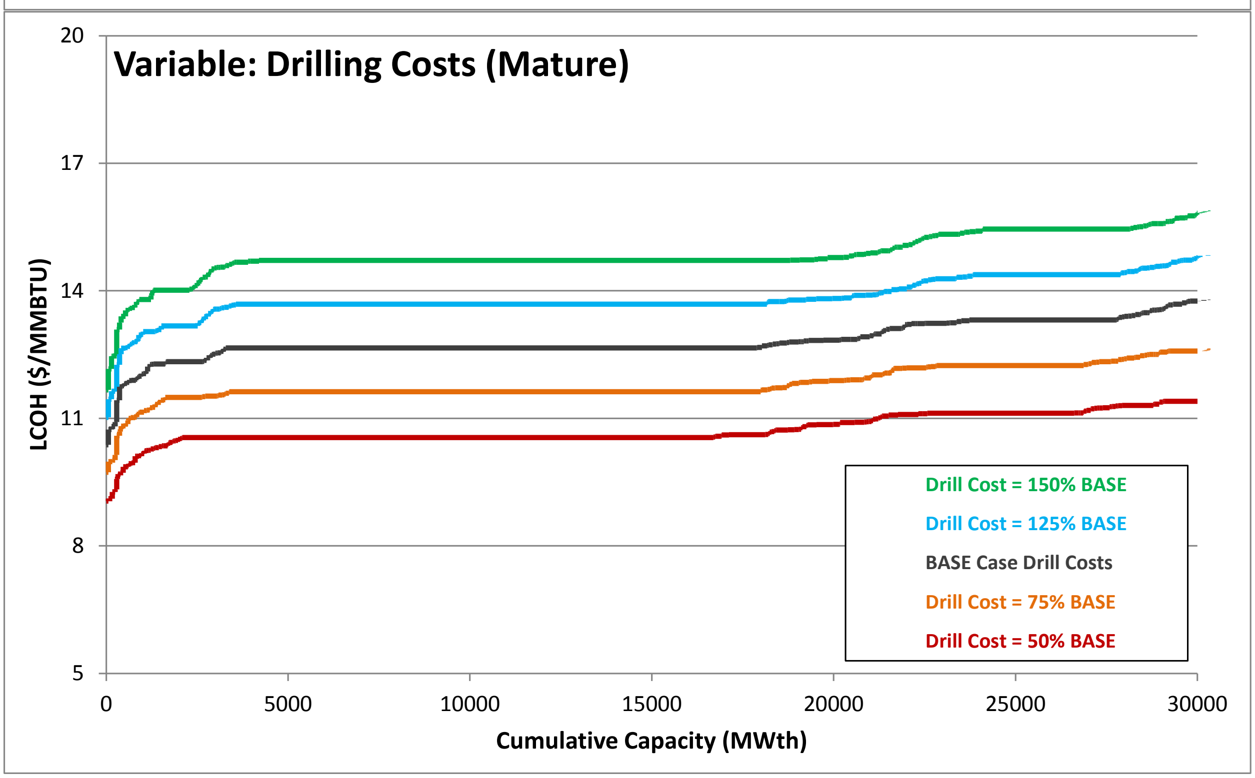


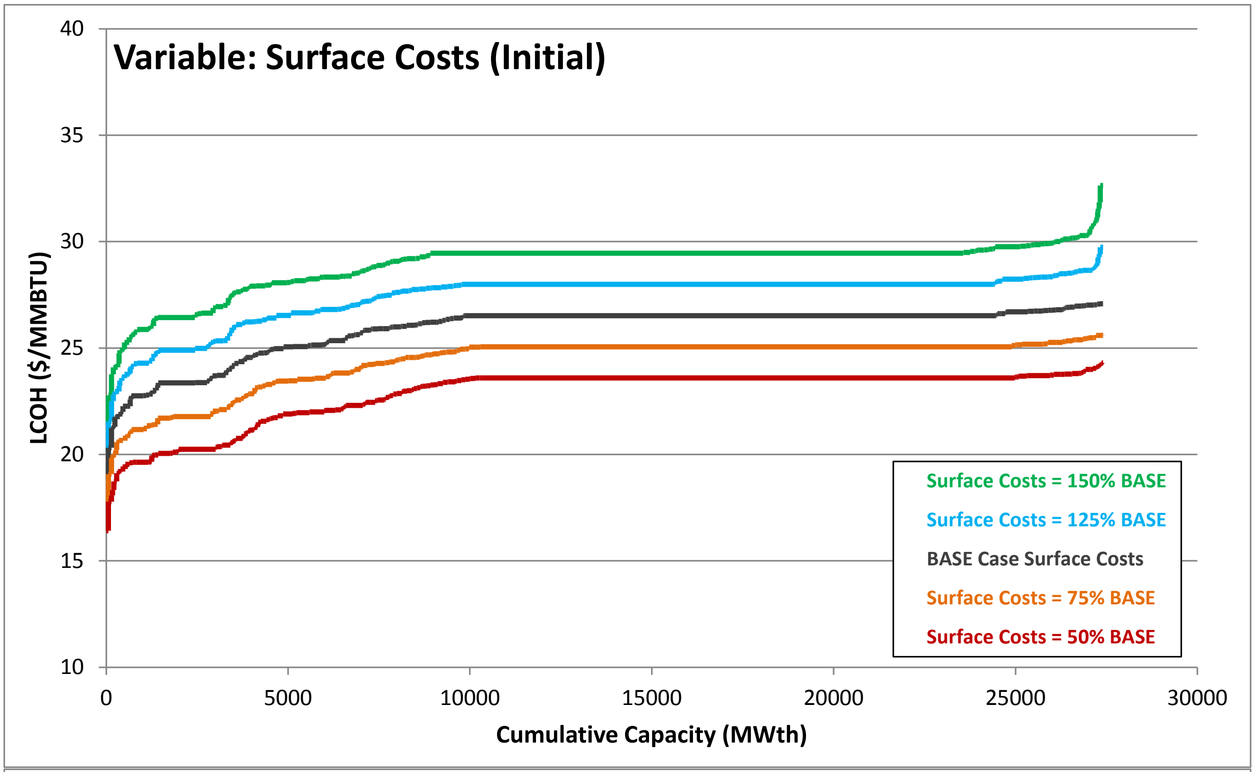
Figure 4.17 Supply curves for both the initial and mature cases (first 30 GW_{th}) with varied drilling costs. Drilling has a linear effect on LCOH in both cases, though the magnitude is different for each case. This is due to the smaller portion of total capital that drilling costs account for in the mature case. Note the different scales. In the initial case LCOHs range from ~15-35/MMBTU while for the mature case they range from ~$9-16/MMBTU.

Because drilling cost is the largest contributor to LCOH in the initial case and remains a significant, albeit less so, factor in the commercially mature case, it is also perhaps one of the largest sources of uncertainty in this model. This is compounded by the highly uncertain nature of estimating drilling costs in the first place. A 25% reduction in drilling cost is well within the scatter of real drilling costs, which can sometimes vary by a factor of 2-3 or more for a given drilling depth (Augustine et al. 2006; Lukawski 2012). Given the linear effect of drilling on LCOH, one can estimate the impact such a variation would have on LCOH. If, for example, drilling costs at a given GDH plant ended up being twice what was predicted by the GEOPHIRES model, then the LCOH for that plant could increase by 55% or more – significantly reducing its chances of providing potentially cost-competitive energy and instead providing further ammunition to opponents of GDH. On the other hand, drilling for a new GDH plant could go smoother than expected and costs could be half what was predicted, reducing the LCOH for that plant by up to 30% or more.

4.3.3 Surface Infrastructure Costs

Surface infrastructure costs were varied using a simple multiplier in the same manner as drilling costs. Costs included in "surface costs" include all capital costs ***not*** associated with the drilling, completion, or stimulation of geothermal wells (these are considered "subsurface costs"). Hence "surface costs" includes the installed capital cost of all network piping, distribution pumps, heat exchangers, peak boilers, and building retrofits that are installed on the surface and operate downstream of the wellhead. The results of the sensitivity simulations for surface costs are shown in Figure 4.18 and Table 4.6.

In the initial learning phase, surface infrastructure costs account for the second highest proportion of total LCOH (behind drilling costs and ahead of O&M costs). Permitting reductions in LCOH of, on average, 13.2% with a 50% reduction in surface cost, surface costs account for roughly 26.4% of total LCOH . This leaves the remaining 19% (54.6% drilling + 26.4% surface = 81%) to be accounted for by O&M and other costs.



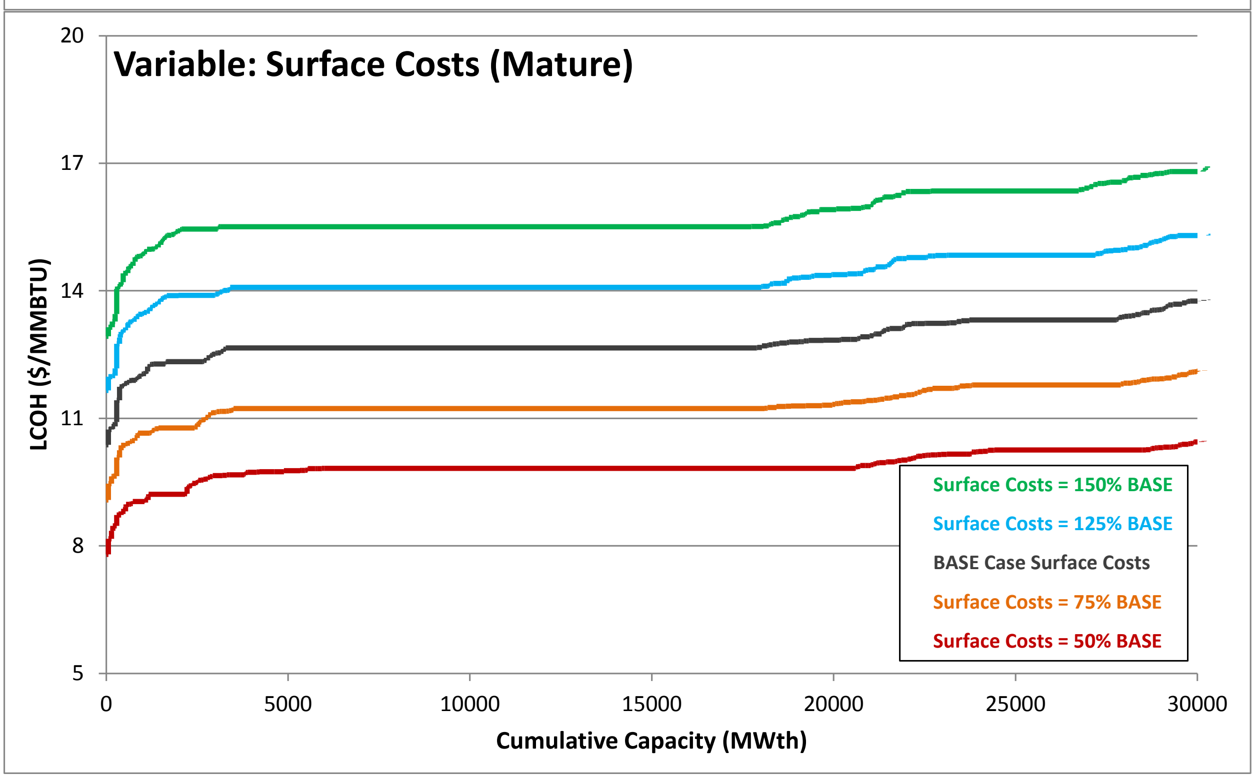


Figure 4.18 Supply curves (for the first 30 GW_{th}) given variations in total surface infrastructure costs for the initial and base case. Note the different scales. For the initial case LCOH ranges from ~$16-30/MMBTU while for the mature case LCOHs ranges from ~$8-17/MMBTU.

Table 4.6 Effects of changes to total surface infrastructure costs for GDH systems for the initial and commercially mature technology cases.

	Change in LCOH Due to Changes in Surface Infrastructure Costs				
	-50% BASE	**-25% BASE**	**BASE CASE**	**+25% BASE**	**+50% BASE**
Initial Case	**50% initial**	**75% initial**	**100% initial**	**125% initial**	**150% initial**
Average:	-13.2%	-6.6%	-	+6.6%	+13.2%
Maximum:	-21.7%	-10.8%	-	+11.1%	+21.9%
Minimum:	-8.7%	-4.4%	-	+4.4%	+8.9%
Ave. $ change:	-$3.36/MMBTU	-$1.68/MMBTU	-	+$1.68/MMBTU	+$3.36/MMBTU
Mature Case	**45% initial**	**67.5% initial**	**90% initial**	**112.5% initial**	**135% initial**
Average:	-23.4%	-11.7%	-	+11.7%	+23.5%
Maximum:	-29.4%	-14.8%	-	+14.8%	+29.6%
Minimum:	-18.4%	-8.0%	-	+9.2%	+18.4
Ave. $ change:	-$3.10/MMBTU	-$1.55/MMBTU	-	+$1.55/MMBTU	+$3.10/MMBTU

As with drilling costs, the effect of surface cost on LCOH is linear but not uniform. This is again explained by differences in network density, gradient, or other factors at each place that may make one component of cost proportionally larger than another. The three major components contributing to surface costs are distribution piping, heat exchange facilities, and building retrofit costs. While the possibility for reducing LCOH by reducing capital costs at the surface is only half that of reducing costs below the surface, there still exists ample opportunity for LCOH reduction through surface cost reduction for the initial case.

By the time the commercially mature case is reached, surface infrastructure costs will have overtaken drilling costs to represent the largest contributor to total LCOH (~47%) for the reasons explained in section 4.3.2 above. At this point surface infrastructure and equipment costs will present the single greatest opportunity for further LCOH reduction. While technological advances in materials and equipment, such as heat exchangers and unit heaters, may reduce surface infrastructure costs, there are other means to reduce surface costs that are not dependent on technology. For example, new communities and subdivisions may be intelligently planned with district heating in mind. This could permit shorter distribution and service pipe distances (reducing piping costs) and/or higher-density housing (reducing retrofit and interior equipment costs). As another alternative, district heating networks could be installed today and operated for a time using some other fuel (such as natural gas) until EGS technology is more mature. At that point EGS could essentially be "plugged in" to the existing district heating network, significantly reducing required surface capital costs. Both of these strategies will be evaluated in further detail in section 4.4.

4.3.4 Operation and Maintenance Costs

Costs of operating and maintaining a GDH system were varied in the same manner as for drilling and surface costs, using a simple scalar multiplier on the total O&M costs calculated by MATLAB and GEOPHIRES. The results of these simulations are shown in Figure 4.19 and Table 4.7. Costs included in the category of operation and maintenance are all annual recurring costs at both the surface and in the subsurface, including wellfield maintenance costs, water costs, costs of distribution network pumping, peaking fuel, routine repair and maintenance, and staff. Dividing the average LCOH change by the change in O&M costs, it can be determined that O&M costs account for roughly 16% of the total LCOH (during the initial phase) and thus do not constitute as large a proportion of LCOH as drilling costs or surface costs. However, they still do contribute significantly to overall LCOH and thus cannot be completely ignored.

Table 4.7 Effects of changes to net annual operating and maintenance costs of GDH systems for the initial and commercially mature technology cases.

	Change in LCOH Due to Changes in Operation and Maintenance Costs				
	-50% BASE	**-25% BASE**	**BASE CASE**	**+25% BASE**	**+50% BASE**
Initial Case	**50% initial**	**75% initial**	**100% initial**	**125% initial**	**150% initial**
Average:	-8.4%	-4.0%	-	+4.2%	+8.0%
Maximum:	-11.5%	-7.1%	-	+8.0%	+12.8%
Minimum:	-6.3%	-2.8%	-	+2.9%	+6.2%
Ave. $ change:	-$2.13/MMBTU	-$1.02/MMBTU	-	+$1.07/MMBTU	+$2.04/MMBTU
Mature Case	**45% initial**	**67.5% initial**	**90% initial**	**112.5% initial**	**135% initial**
Average:	-5.3%	-2.7%	-	+3.8%	+6.8%
Maximum:	-8.2%	-5.4%	-	+6.2%	+9.1%
Minimum:	-4.3%	-1.9%	-	+2.1%	+4.2%
Ave. $ change:	-$0.70/MMBTU	-$0.35/MMBTU	-	+$0.50/MMBTU	+$0.90/MMBTU

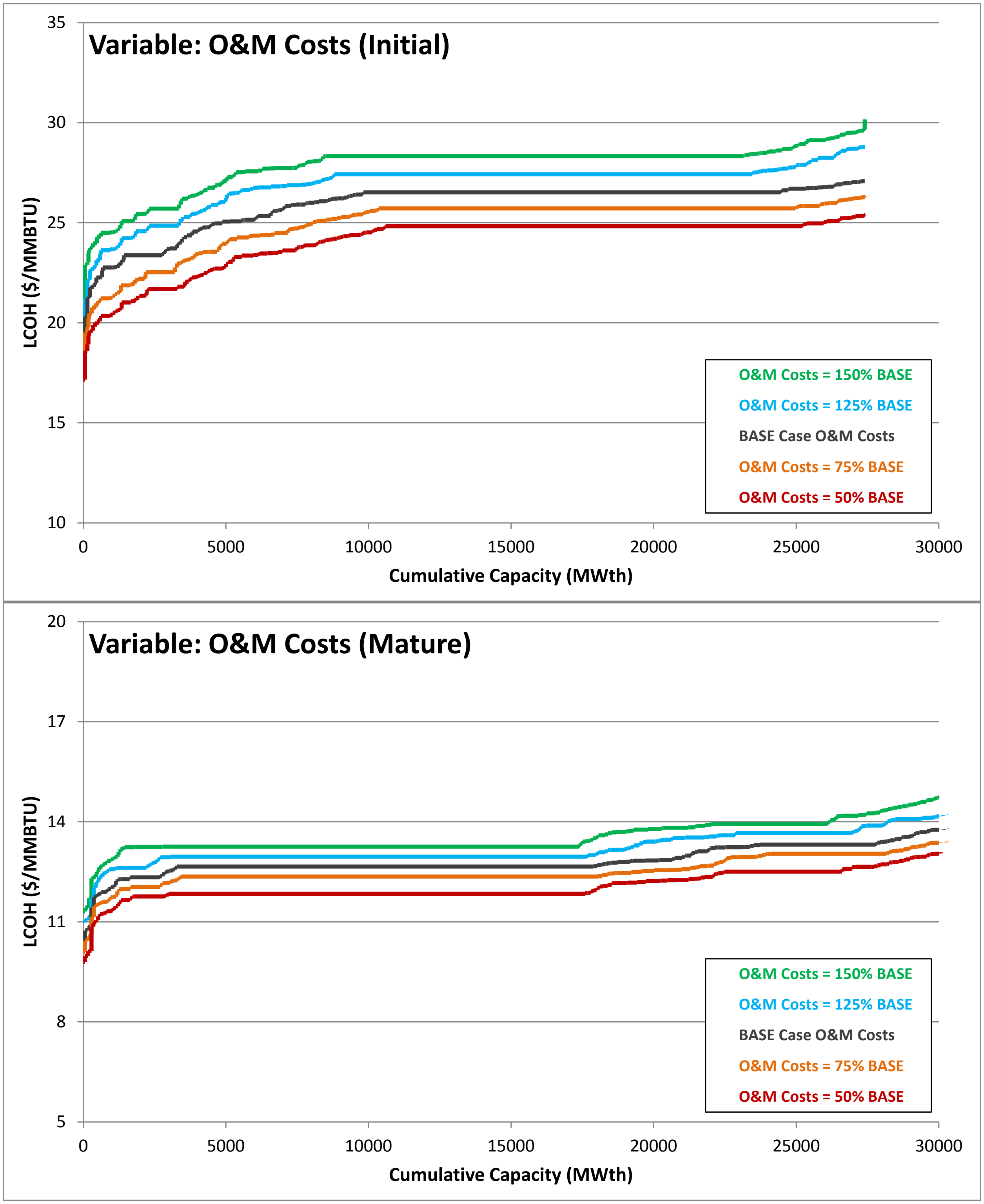


Figure 4.19 Supply curves (for the first 30 GW_{th}) for the initial and commercially assumptions given varying operating and maintenance costs. Note the different scales. For the initial case, LCOH ranges from ~$17-30/MMBTU while for the mature case LCOH ranges from ~$10-15/MMBTU.

Looking at the mature case, the influence of O&M costs on LCOH appears to have dropped significantly. Dividing a 6.8% change in LCOH by a 50% change in O&M costs yields a factor of 13.6%. However, noting that all costs are now at least 10% lower in the mature case than they were for the initial case, one can divide this factor by 90% and find that O&M costs still account for roughly 15% of total LCOH – meaning the share of LCOH attributable to O&M costs remains fairly consistent between the initial and mature cases. Regardless, because of its small share of LCOH, O&M costs do not present a significant opportunity for reducing LCOHs and thus should only be targeted for cost reduction when the investment required is low.

4.3.5 System Lifetime

Figure 4.20 and Table 4.8 show the effects of variations to the overall lifetime of the GDH system for the initial and commercially mature cases. As expected, LCOH increases with a shorter system lifetime and decreases with increased lifetimes. This is because the large capital investment required to install a GDH plant can be amortized over a longer period of time (with smaller payments) if the plant can achieve longer lifetimes. Lifetime may be a factor of the thermal drawdown and recharge rates in the reservoir or material characteristics of the system equipment and components, or both. Hence improvements in either or both of these areas may be required to realize improvements in lifetime.

Table 4.8 Effects of changes to the overall lifetime of GDH systems for the initial and commercially mature technology cases.

	Change in LCOH Due to Changes in System Lifetime				
	-40% BASE	**-20% BASE**	**BASE CASE**	**+20% BASE**	**+40% BASE**
Initial Case	**18 years**	**24 years**	**30 years**	**36 years**	**42 years**
Average:	+30.9%	+11.3%	-	-7.2%	-12.1%
Maximum:	+32.3%	+11.9%	-	-7.8%	-12.7%
Minimum:	+29.1%	+10.6%	-	-6.5%	-11.1%
Ave. $ change:	+$7.86/MMBTU	+$2.88/MMBTU	-	-$1.84/MMBTU	-$3.08/MMBTU
Mature Case	**18 years**	**24 years**	**30 years**	**36 years**	**42 years**
Average:	+29.3%	+10.7%	-	-6.8%	-11.4%
Maximum:	+31.9%	+13.4%	-	-7.2%	-12.0%
Minimum:	+28.0%	+10.4%	-	-3.7%	-8.3%
Ave. $ change:	+$3.87/MMBTU	+$1.42/MMBTU	-	-$0.90/MMBTU	-$1.51/MMBTU

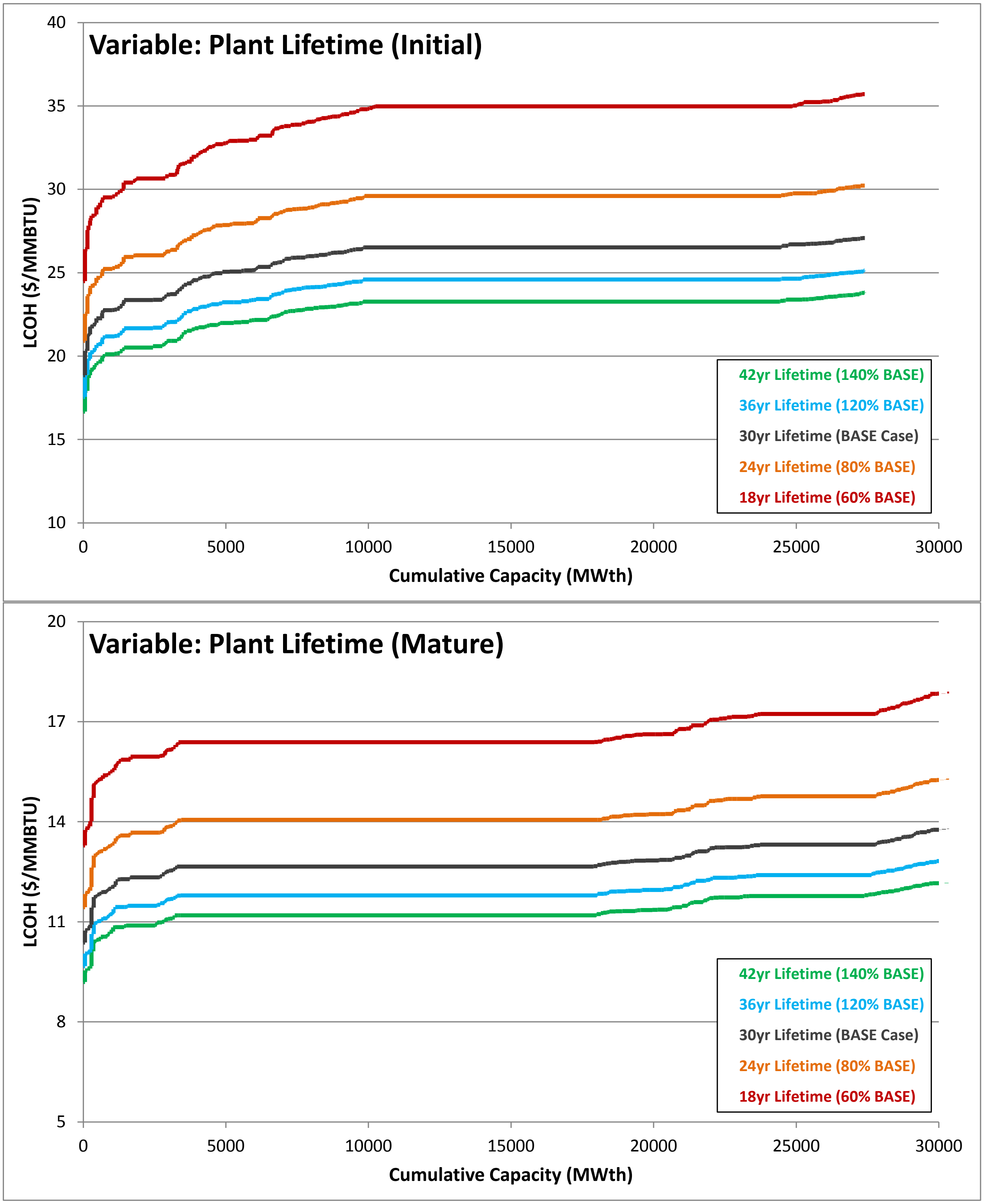


Figure 4.20 Supply curves (for the first 30 GW_{th}) for both the initial and commercially mature cases given varying system lifetime. Note the different scales. For the initial case LCOHs range from ~$16-36/MMBTU. For the mature case they range from ~$9-18/MMBTU. Note also the diminishing returns from increases to system lifetime in both cases.

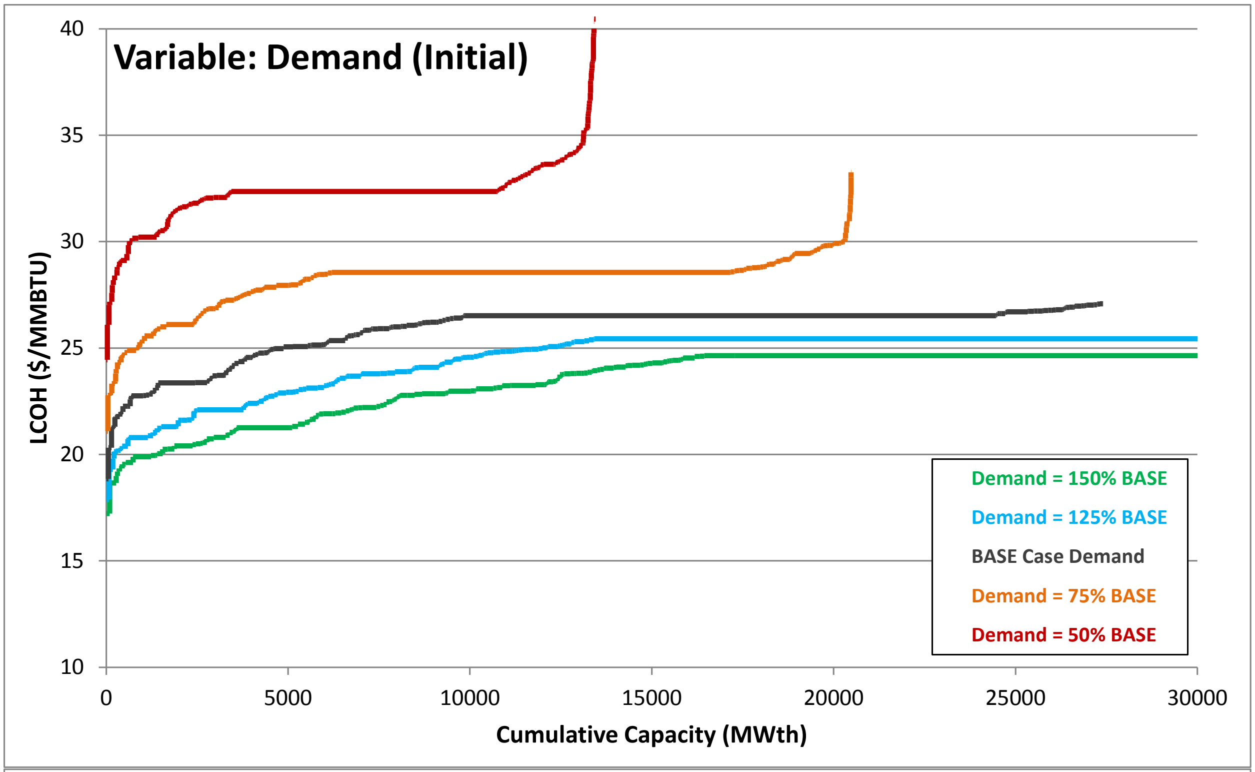
It is important to note that increases in lifetime are subject to diminishing returns in the same way as was flow rate (section 4.3.1). That is, LCOH is more sensitive to decreases in lifetime than it is to increases in lifetime. This is because the operation and maintenance costs associated with a GDH plant remain constant (at least that is the assumption) throughout the lifetime of the plant. This means that while the amortized cost to recoup initial capital investment decreases as lifetime continues to increase, the yearly operation and maintenance costs remain fixed, resulting in LCOH behavior that exponentially approaches an absolute minimum at (impossible) lifetimes of infinity.

The implication of this is that at relatively low equipment lifetimes it may be worth investment to increase the system's lifetime but that as the system lifetime continues to increase, it will likely be more fruitful to invest in reducing operation and maintenance costs rather than further extending the lifetime. The exact threshold point is difficult to determine because the relative costs of R&D investment in lifetime and O&M research is unknown. However, it can be roughly estimated by finding the point in Figure 4.14 where the slope of the lifetime line (solid green) becomes less than the slope of the O&M cost line (dotted orange). However, it appears that this point is not reached even at lifetimes of 42 years. Hence this suggests that the threshold lifetime at which one should begin investing in O&M cost reduction rather than lifetime extension is somewhere beyond 42 years, though perhaps not much further beyond.

It is also interesting to note that the proportional change in LCOH remains almost constant between the initial and mature case. This is likely due to the fact that the proportion of total LCOH attributable to O&M costs also remains fairly constant between the initial and mature cases (as explained in section 4.3.4).

4.3.6 Demand

Estimated thermal demand was varied at each place by applying a scalar multiplier to the entire demand curve calculated in section 3.2.3. Figure 4.21 and Table 4.9 show the results of this sensitivity analysis.



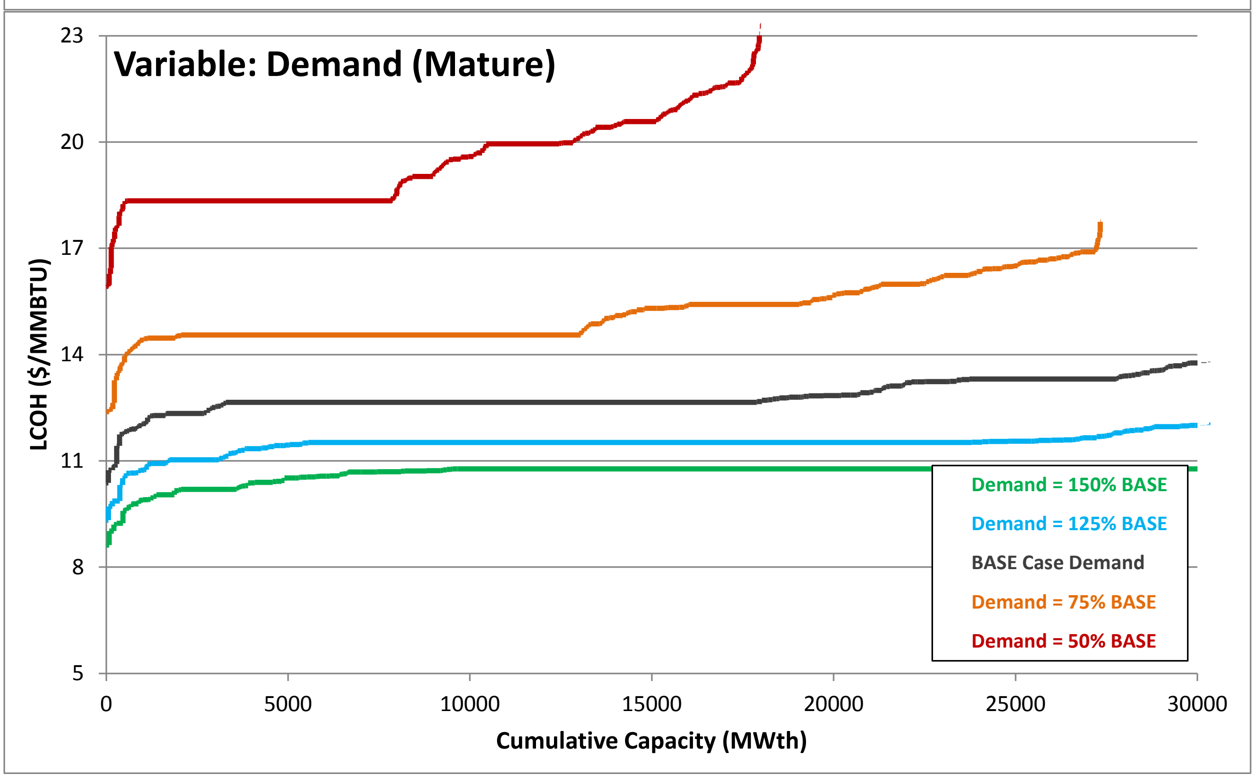


Figure 4.21 Supply curves (first 30 GW_{th}) for initial and commercially mature cases given variations in total demand. Note the difference in scales. In the initial case LCOH ranges from ~$17-40/MMBTU while for the mature case LCOH ranges from ~$9-23/MMBTU.

Table 4.9 Effects of changes to total estimated heating demand for the initial and commercially mature technology cases.

	Change in LCOH Due to Changes in Demand				
	-50% BASE	**-25% BASE**	**BASE CASE**	**+25% BASE**	**+50% BASE**
Initial Case	**50% base**	**75% base**	**100% base**	**125% base**	**150% base**
Average:	+32.2%	+10.7%	-	-6.1%	-10.3%
Maximum:	+69.2%	+23.9%	-	-13.2%	-19.1%
Minimum:	+19.7%	+5.9%	-	-3.5%	-6.0%
Ave. $ change:	+$8.20/MMBTU	-$1.02/MMBTU	-	-$1.54/MMBTU	-$2.61/MMBTU
Mature Case	**50% base**	**75% base**	**100% base**	**125% base**	**150% base**
Average:	+54.5%	+18.3%	-	-10.2%	-16.8%
Maximum:	+77.9%	+25.6%	-	-14.0%	-22.2%
Minimum:	+41.0%	+12.6%	-	-7.6%	-12.7%
Ave. $ change:	+$7.20/MMBTU	+$2.41/MMBTU	-	-$1.35/MMBTU	-$2.22/MMBTU

As expected, decreasing heating demand at a given place increases the levelized cost of heat from GDH, while increasing demand decreases the LCOH. This may be explained in two ways. First, by reducing heat demand in a given area (for example through building weatherization or improvements in home insulation) the overall quantity of heat that can be sold per unit area decreases. This effectively reduces the capacity factor of a given plant and thus increases LCOH. Similarly, the area served by a single GDH plant could be expanded in order to capture the same demand as before, but this would incur additional network costs and again increase LCOH. In many cases the service area *cannot* be expanded further because (as was modeled here) demand in a given town is finite. Either way, the result of decreased demand is that heat producers must charge more per unit heat in order to recoup expenses. This may provide one possible explanation for why many utilities seem to be so reluctant to undertake or incentivize energy-efficiency measures (such as smart-grid projects) of their own volition, without the support of government incentives. Such measures effectively shrink utilities' target (and frequently captive) markets.

While demand reduction appears to be a drawback for heat producers and, by increasing LCOHs, may lead to lower adoption rates of GDH, there also may be a positive feedback loop at work that could significantly reduce energy consumption. When consumers decrease their energy demand through efficiency measures, producers of heat must then charge more per unit energy to recoup their expenses. With increased per-unit energy prices, additional efficiency measures that previously had net negative values may now have a net positive value, accelerating adoption of these new, more expensive energy-reduction measures. This may result in another rate-hike, and thus the adoption of yet further efficiency measures to combat this hike. The net result of this feedback loop could in effect be drastically reduced energy consumption, albeit with drastically increased energy prices for the small amount of energy still consumed.

The feedback loop outlined above contradicts a common viewpoint in the energy debate that increased energy efficiency may lead to *lower* energy costs for consumers and hence increased energy consumption—termed the "rebound effect"—that effectively negates any environmental benefits from energy efficiency measures (e.g. Hanley et al 2009, Herring 2006, Greening et al 2000). Instead, Figure 4.21 shows a clear increase in the real cost of energy due to energy efficiency measures on the part of consumers.

In the "rebound effect" as it is frequently argued, energy is viewed as a production factor—that is, energy efficiency measures mean one can obtain more work output per unit energy. As a result, a firm may be able to produce more output with less energy and thus may increase production (and energy use), or a driver may be able to drive farther with less fuel and thus will drive more. However, the analysis here only pertains to space and water heating through district heating, and thus one must consider only the behavior of residential and commercial consumers as it pertains to space and water heating. Demand for these products, while not perfectly inelastic, is relatively inelastic and has a finite cap – a "satiation" effect. One is not likely to increase the temperature inside one's home beyond a comfortable limit simply because the cost of heating has dropped. Similarly, while one may be more inclined to take longer showers or wash clothes on a warm-water rather than cold-water cycle, hot water consumption is not likely to increase drastically or beyond a certain threshold.

Additionally, the real cost increase observed in Figure 4.21 also seems to contradict basic theory of supply and demand in which a negative shift in demand produces a negative movement along the supply curve and a drop in price. This is because the typical supply-demand relationship applies to a competitive market with multiple producers and consumers.

Instead, the model here is evaluating the break-even price required for a single firm to operate—that is, a utility not necessarily trying to maximize profit but rather to minimize price. If a firm is already operating at zero-profit, then if the maximum amount it is physically able to sell decreases (due to negative shift in demand in a finite market) but its costs remain the same, it *must* increase price if it is to continue to operate and break-even.

It is worth pointing out the unique supply curve behavior observed where a drop in heating demand sometimes results in a sharp increase observed in LCOH (e.g. around 13 GW_{th} in the initial case). This is because several of the places with the lowest LCOHs in the base-case scenarios were small towns with only enough collective demand to merit a single GDH plant. In this case, decreasing demand results in a very large drop in capacity factor and thus a huge spike in LCOH. On the other hand, in towns with enough collective demand to support multiple GDH plants, a decrease in demand may result merely in the elimination of one plant and the expansion of the service area of the remaining plants to cover this newly un-served area. In this case the increase in LCOH is a result of increased capital cost associated with expanding the network of each GDH plant rather than a drop in capacity factor.

Finally, it is interesting to note that the magnitude of the effect of demand on LCOH is significantly increased for the commercially mature case when compared to the initial case (this is apparent in Figure 4.15 where demand (solid orange line) has the largest effect of any single variable on LCOH). This is most likely a result of the increased service area covered by each EGS doublet with the increased flow rates of the mature case. As explained in section 4.3.2, because of the increased flow rate, a single doublet can serve about three times the demand in the mature case than it can in the initial case. Because each doublet serves so much more demand, it will be that much more sensitive to changes (particularly drops) in demand.

4.3.7 Secondary Fluid Temperatures

Figures 4.22 and 4.23 and Tables 4.10 and 4.11 show the effects of changing the design temperatures of the secondary fluid heating system. It is clear that adjustments to the secondary supply temperature have an almost imperceptible effect on the LCOH. This will only be true as long as T_{ss} remains below T_{prod} by at least T_{pinch}. If the required secondary supply temperature increases to a point above current $T_{prod,}$ then an increase in T_{prod} will be necessary, requiring deeper drilling and a significant increase in LCOH.

Table 4.10 Effects of changes to secondary fluid supply temperature on LCOH for the initial and commercially mature technology cases.

	Change in LCOH Due to Changes to Secondary Fluid Supply Temperature				
	-40% BASE	**-20% BASE**	**BASE CASE**	**+20% BASE**	**+40% BASE**
Initial Case	**N/A**	**56°C**	**70°C**	**84°C**	**98°C**
Average:	-	+1.0%	-	0.0%	-0.7%
Maximum:	-	+1.4%	-	+1.9%	+7.2%
Minimum:	-	+0.4%	-	-0.7%	-1.2%
Ave. $ change:	-	+$0.26/MMBTU	-	-$0.01/MMBTU	-$0.18/MMBTU
Mature Case	**N/A**	**40°C**	**50°C**	**60°C**	**70°C**
Average:	-	+2.3%	-	-1.0%	-1.3%
Maximum:	-	+5.5%	-	-1.5%	-2.4%
Minimum:	-	+1.5%	-	+1.4%	+3.5%
Ave. $ change:	-	+$0.30/MMBTU	-	-$0.14/MMBTU	-$0.18/MMBTU

Table 4.11 Effects of changes to secondary fluid return temperature on LCOH for the initial and commercially mature technology cases.

	Change in LCOH Due to Changes to Secondary Fluid Return Temperature				
	-40% BASE	**-20% BASE**	**BASE CASE**	**+20% BASE**	**+40% BASE**
Initial Case	**24°C**	**32°C**	**40°C**	**48°C**	**56°C**
Average:	-12.8%	-6.3%	-	+7.3%	+16.4%
Maximum:	-16.0%	-8.6%	-	+10.9%	+21.0%
Minimum:	-6.6%	-2.8%	-	+3.5%	+8.6%
Ave. $ change:	-$3.28/MMBTU	-$1.61/MMBTU	-	+$1.87/MMBTU	+$4.19/MMBTU
Mature Case	**18°C**	**24°C**	**30°C**	**36°C**	**42°C**
Average:	-7.6%	-3.5%	-	+5.7%	+11.2%
Maximum:	-10.2%	-6.1%	-	+7.7%	+14.4%
Minimum:	-3.8%	-1.6%	-	+2.7%	+6.3%
Ave. $ change:	-$1.01/MMBTU	-$0.46/MMBTU	-	+$0.75/MMBTU	+$1.48/MMBTU

While T_{ss} has little impact on LCOH, Figure 4.23 suggests that the secondary **return** temperature (T_{sr}) has a significant influence on LCOH. This is because by reducing T_{sr}, the primary fluid return temperature, $T_{pr,}$ can also be reduced and system-wide ΔT will increase. This increase in ΔT results in an increase in overall availability (or exergy), meaning more energy can be extracted from the primary fluid and thus total possible power production increases.

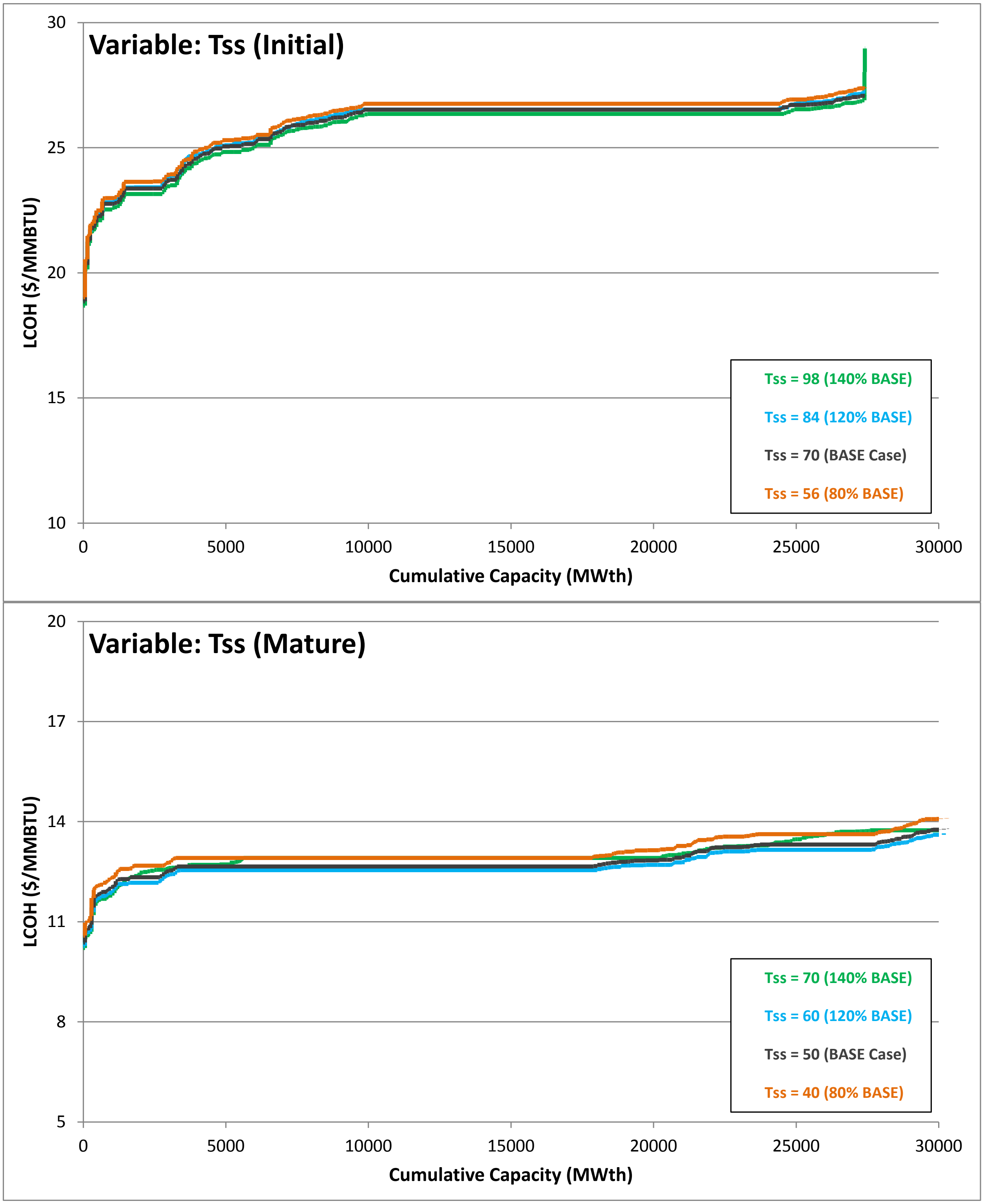


Figure 4.22 Supply curves for the first 30 GW_{th} of the initial and mature cases given changes in secondary fluid supply temperature. Note that secondary fluid supply temperature has a very limited effect on LCOH, if any at all.

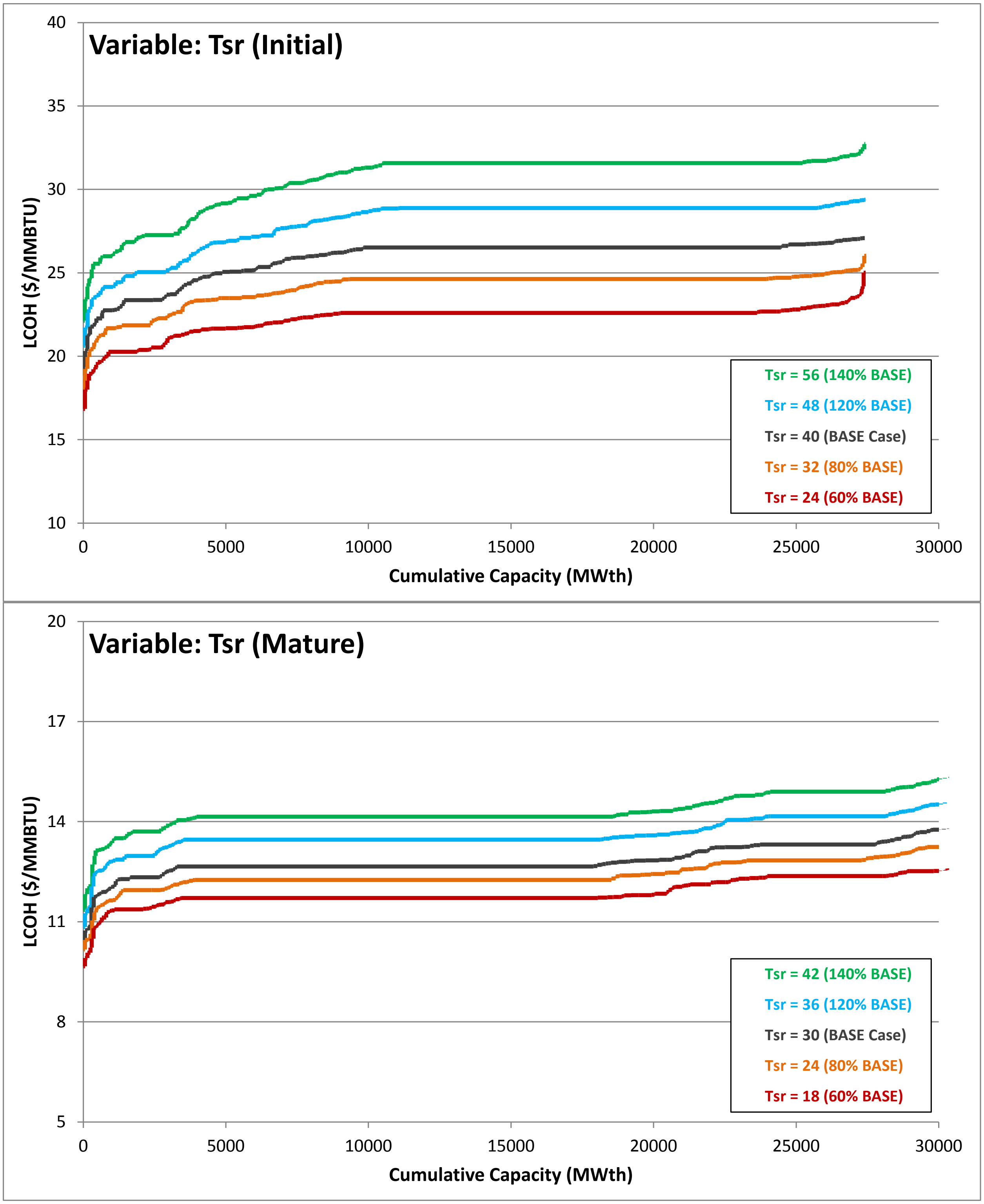


Figure 4.23 Supply curves for the first 30 GW_{th} of the initial and mature cases given changes in secondary fluid return temperature. Note the different scales. In the initial case LCOHs range from ~$17-32/MMBTU while for the mature case they range from ~$10-15/MMBTU.

However, because of the 65°C limit imposed on system-wide ΔT, the reduced LCOH observed in Figure 4.23 is not necessarily solely a result of increased ΔT. Rather, it is also a result of a reduction in the optimal T_{prod} (e.g. from 105°C to 95°C or 95°C to 85°C) as the cap on ΔT will now be reached at lower production temperatures—meaning shallower (and cheaper) drilling.

The strong influence reduced T_{sr} has on LCOH can thus be attributed to the strong influence of drilling cost on LCOH. For example, in the initial case, reducing T_{sr} from 40°C to 32°C resulted in a drop in optimal production temperatures for nearly all of the top 200 places. This was accompanied by a reduction in average drilling cost from $22.5 million per GDH plant to $19.2 million per plant—a 14.7% reduction. As was seen in section 4.3.2, a 25% reduction in drilling costs yields an average drop in LCOH of 13.7% (for the initial case), suggesting that a 14.7% reduction in drilling cost should yield around a (14.7%/25%)*13.7% = 8.0% drop in LCOH – very similar to the observed 6.3% average drop in LCOH from reducing T_{sr}. The slight 1.7% difference can be can be attributed to the slightly reduced ΔT (95 - 32 = 63°C) compared to the full 65°C obtained when production temperatures were 105°C and secondary return temperature was 40°C for the initial base case.

Comparing the initial to the mature case it is apparent that the effects of changes to secondary return temperature on LCOH are slightly less in the mature case than in the initial. This is a result of the lessened impact of drilling cost on LCOH in the mature case (section 4.3.2).

4.3.8 Geothermal Gradient

It was determined in section 4.2.3 that geothermal gradient does in fact have a noticeable effect on the LCOH for GDH. In order to get a better picture of how the gradient affects LCOH at a given place, simulations were run with a scalar multiplier applied to the specific gradient at each location as determined from the resource map discussed in Chapter 2. The results of these simulations are shown in Table 4.12 and Figure 4.24.

Geothermal gradient has a very significant effect on GDH LCOHs but, as with production well flow rates (4.3.1) and plant lifetime (4.3.5), these effects drop off in magnitude as gradient increases. Despite this, geothermal gradient still has the single largest influence on LCOH of any

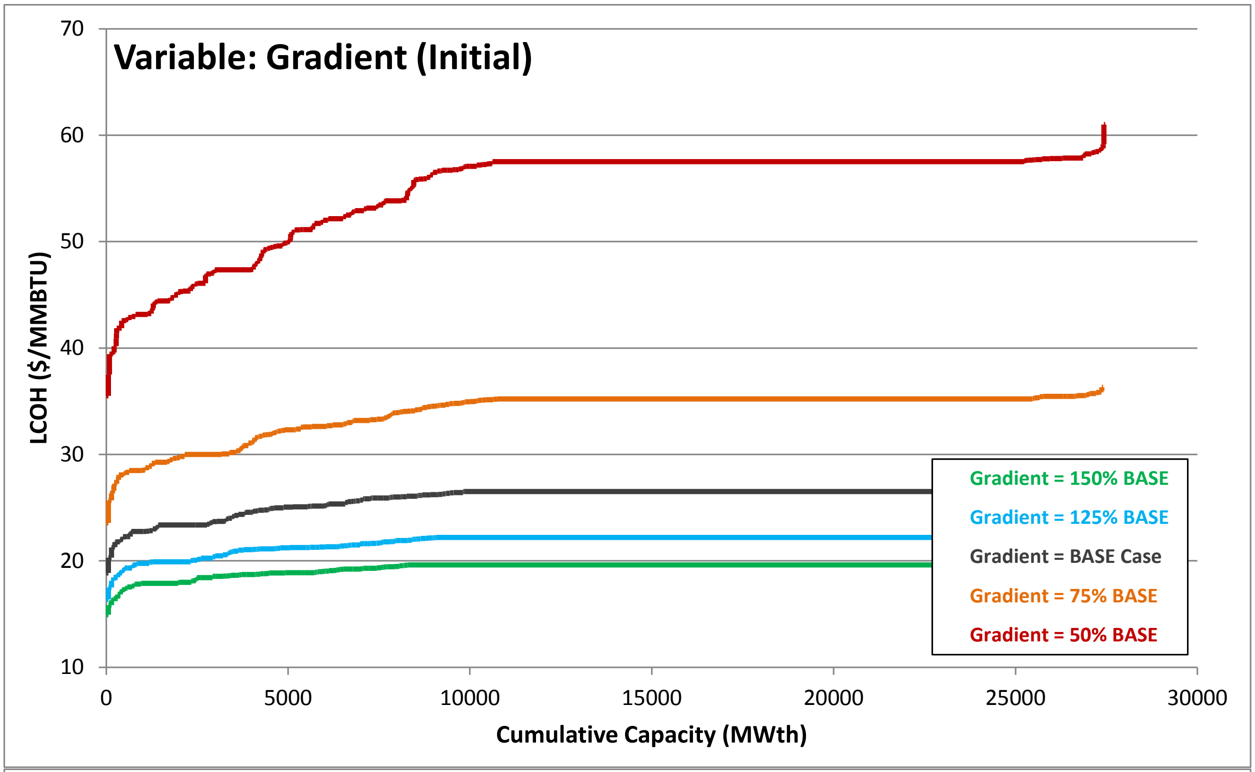
Table 4.12 Effects of changes to the geothermal gradient on LCOH for the initial and commercially mature technology cases.

	Change in LCOH Due to Changes in Geothermal Gradient				
	-50% BASE	**-25% BASE**	**BASE CASE**	**+25% BASE**	**+50% BASE**
Initial Case	**50% base**	**75% base**	**100% base**	**125% base**	**150% base**
Average:	+100.9%	+28.3%	-	-14.6%	-23.0%
Maximum:	+126.6%	+35.4%	-	-17.9%	-28.1%
Minimum:	+56.3%	+16.1%	-	-8.1%	-13.2%
Ave. $ change:	+$25.77/MMBTU	+$7.23/MMBTU	-	-$3.72/MMBTU	-$5.88/MMBTU
Mature Case	**50% base**	**75% base**	**100% base**	**125% base**	**150% base**
Average:	+55.8%	+16.4%	-	-8.7%	-13.9%
Maximum:	+76.2%	+22.2%	-	-11.3%	-18.4%
Minimum:	+40.9%	+9.0%	-	-5.2%	-8.0%
Ave. $ change:	+$7.36/MMBTU	+$2.16/MMBTU	-	-$1.15/MMBTU	-$1.84/MMBTU

single variable in the initial case, and one of the largest influences in the mature technology case. However, gradient differs from the other variables examined in this section in that technological advances cannot improve the geothermal gradient in the same way they can for lifetimes, flow rates, or capital costs. Still, exploration investment is required in order to identify and characterize hotspots.

Notice that in the mature technology case, gradient has a reduced effect on LCOH as compared to the initial case. This is a result of the shift in capital costs for the mature case from drilling to surface costs that was discussed in section 4.3.2. With drilling costs comprising less of total LCOH in the mature case, the effect of gradient—which is manifested in the required drilling depth—is also reduced.

The results here illustrate one of the major uncertainties and dangers of GDH. If the geothermal gradient at a particular location is underestimated, then when that location is developed the LCOH may prove to be less than anticipated – a nice bonus for geothermal developers. On the other hand, if the resource is *overestimated* (by even as little as a few °C/km) then a GDH development could be irreversibly doomed to fail before the first hole is even drilled – something developers may not find out until significant investment has already been made. Hence, it is absolutely crucial for the success of future GDH developments that geothermal resources be as carefully and accurately characterized as possible. This will likely require drilling exploration slim-holes in areas of identified potential.



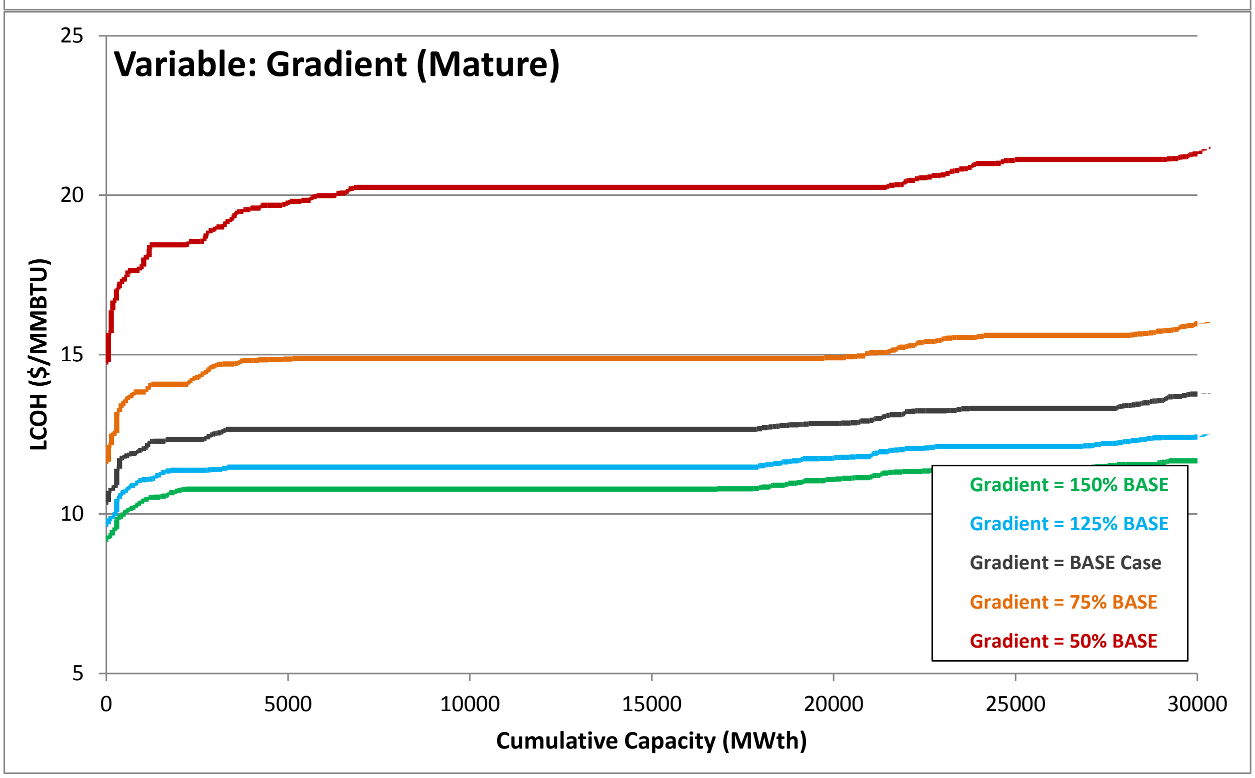


Figure 4.24 Supply curves for the first 30 GW_{th} for the initial and mature cases given changes to the geothermal gradient. Note that each location has a different estimated gradient, ranging, for the top 200 places, from 22.2-36.4°C/km with an average of 26.9°C/km. This average is significantly higher than the average gradient for the whole dataset (24.2°C/km). Note also the differences in y-axis scale between the two figures.

4.3.9 Discount Rate

The discount rate assumed by the user has the potential to heavily influence LCOH. Table 4.13 and Figure 4.25 show the magnitude of this effect. It is clear that discount rate can have a very significant effect on LCOH, with a 25% change in rate resulting in roughly a 10-12% change in LCOH in either direction for both cases. Also note that the real change in discount

Table 4.13 Effects of changes to the discount rate on LCOH for the initial and commercially mature technology cases.

	Change in LCOH Due to Changes in Discount Rate				
	-50% BASE	**-25% BASE**	**BASE CASE**	**+25% BASE**	**+50% BASE**
Initial Case	**2.0%**	**3.0%**	**4.0%**	**5.0%**	**6.0%**
Average:	-21.3%	-11.2%	-	+12.1%	+25.3%
Maximum:	-22.3%	-11.7%	-	+12.7%	+26.5%
Minimum:	-19.8%	-10.4%	-	+11.2%	+23.2%
Ave. $ change:	-$5.44/MMBTU	-$2.84/MMBTU	-	+$3.09/MMBTU	+$6.43/MMBTU
Mature Case	**2.0%**	**3.0%**	**4.0%**	**5.0%**	**6.0%**
Average:	-19.8%	-10.3%	-	+11.2%	+23.2%
Maximum:	-20.3%	-10.6%	-	+14.0%	+26.0%
Minimum:	-17.1%	-7.6%	-	+10.6%	+22.0%
Ave. $ change:	-$2.61/MMBTU	-$1.36/MMBTU	-	+$1.48/MMBTU	+$3.06/MMBTU

rate is only 1 percentage point in either direction – a very small number. The 4% discount rate assumed for the base case was a conservative value based on the rate used by the U.S. Department of Commerce for evaluating public energy projects, so it is believed to be a dependable number.

These results highlight the importance of the prevailing economy in determining how competitive GDH may be. Generally, when the economy is doing well higher discount rates must be used, making GDH appear like a less favorable investment. However, when the economy slows down and lower discount rates can be used (as is currently the case), GDH may appear to be a more attractive public investment. Regardless of current economic conditions, it is clear that one must be particularly cognizant of the discount rate used for LCOH calculations.

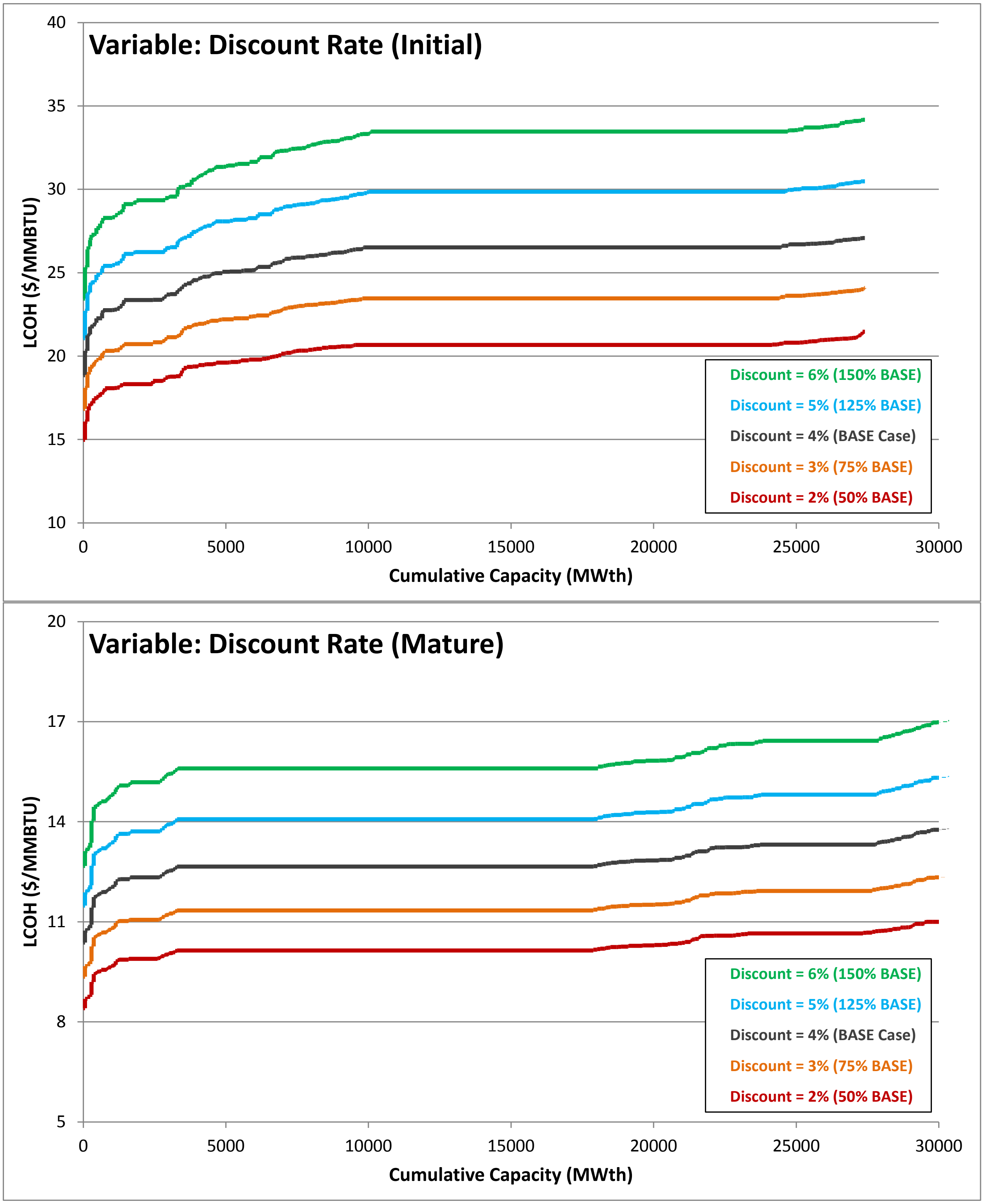


Figure 4.25 Supply curves for first 30 GW_{th} for both initial and mature cases given changes in discount rate. Note the significant, linear effect of discount rate on LCOH. Also note the difference in the y-axis scale, with LCOH ranging from ~$15-34/MMBTU for the initial case and from ~$8-17/MMBTU for the mature case.

Additionally, the rate used is representative of the rate used by government entities for public energy projects. Typically governments are more risk-averse than private corporations and are willing to accept longer payback periods, meaning discount rates for government projects may be much lower than those used by private developers. This distinction is important. The LCOH results presented here operate under the assumption that GDH development will be undertaken with heavy public investment from public entities, such as publicly-owned utilities.   If, alternatively, GDH development is left solely for autonomous private companies to undertake, then the discount rates and subsequent LCOHs would be much less favorable. Hence, government involvement (at all levels) is critical for the early success of GDH.

Finally, the significant influence of discount rate illustrates the importance of increasing understanding regarding the technology, opportunities, and risks behind EGS systems and district heating. This includes characterizing geothermal resources, improving EGS reservoir technology (e.g. flow rates), addressing uncertainty in drilling costs and natural gas prices, and more. With a greater understanding of EGS district heating (by both developers and potential investors), risk can be better understood and addressed and lower financing rates can likely be secured – improving the overall LCOH of GDH projects.

4.3.10 Sensitivity Summary

Several key findings from these sensitivity analyses are worth reiterating:

1) Initially, flow rate, drilling costs, lifetime, and secondary return temperature have large effects on LCOHs for EGS-based district heating. These areas should be targeted early for research and development to increase the ability of GDH to compete with natural gas. Discount rates also strongly affect LCOH and can be reduced by increasing understanding of and minimizing risks associated with EGS technology and district heating.

2) Once EGS district heating technology is more mature, the beneficial effects of increasing well flow rate drop off, and even reach a point where further increases to flow rate actually increase LCOH. The optimal flow rate is likely somewhere between 60-100 kg/s.
3) As flow rates increase, the area that can be served by a single EGS doublet increases, meaning the share of surface infrastructure costs vs. subsurface (e.g. drilling and completion) costs increases. Hence once EGS technology is mature, lowering surface infrastructure costs poses the greatest opportunity for further reducing LCOHs.
4) Heating demand has a very strong but inverse effect on LCOH. Reducing demand (e.g. through energy efficiency measures) actually serves to *increase* LCOHs. This double-edged sword makes demand management a tricky question as GDH moves forward. One way to address this may be to target only peak demand periods for demand reduction measures. By reducing peak demand loads but maintaining summer loads as they are, capacity factors could be increases and this may serve to at least maintain LCOHs while reducing demand, if not actually decreasing them.
5) Geothermal gradient has one of the strongest effects on LCOH of any single variable. Unfortunately, it is completely out of the control of GDH engineers to increase the geothermal gradient at a given location. However, by improving collective knowledge of available geothermal resources and exploring for and characterizing hot spots, high gradients can be exploited where they exist.

4.4 Other Potential Strategies for Increasing Competitiveness of GDH

Thus far reducing LCOHs from GDH through technological advances and cost reduction measures have been discussed. However, there may be other simple ways in which the competitiveness of GDH can be increased *today* without having to wait for EGS technology to mature. In a sense, increasing competitiveness through these strategies can help "jump-start" GDH deployment – helping it to overcome initial competition barriers (because of its initially high LCOH) and start making its way down the learning curve (i.e. Figure 4.4) sooner rather than later. Several of these strategies will be discussed in this section. Note that since the goal of this section is to identify strategies that might make GDH competitive with natural gas *today* (i.e. without having to wait for EGS technology advances), most of the analysis in this section will focus exclusively on technology and natural gas prices *as they exist today* – i.e. the initial learning phase conditions. It has already been made clear that GDH is very likely to be competitive even in the near future given advances in technology and rising gas prices.

4.4.1 Increasing Production Temperature and Lifting the Limit on System ΔT

At each "place" six different production temperatures were evaluated (75, 85, 95, 105, 115 and 125°C) and the production temperature that resulted in the lowest LCOH at that particular place was noted and recorded as the "optimum temperature." The LCOH associated with that optimum production temperature was then used as the LCOH at that place for all subsequent supply curves and analyses. Of the six production temperatures investigated, 105°C proved to be the optimum temperature for nearly all of the lowest-LCOH "places" investigated for the initial case, and 95°C was overwhelmingly the optimum temperature for the mature technology case. The only situations in which 105°C (initial) or 95°C (mature) were not the optimal production temperatures were in places where demand was so low that a single GDH plant could more than meet peak demand, hence drilling to such high temperatures would be unnecessary and only serve to increase costs and lower the net capacity factor of the GDH plant.

These optimum temperatures make sense given that during all simulations a limit of 65°C was placed on the maximum system-wide ΔT (i.e. production temperature minus reinjection temperature: $T_{ps} – T_{pr}$) to account for limits in the type of piping and equipment that were assumed for the model and to coincide with real observed ΔT values from currently operating GDH systems. Hence with a return temperature of 40°C (base for the initial case), any exergy associated with ΔT up to 65°C would be used as energy. On the other hand, if ΔT exceeded 65°C (i.e. if production temperature exceeded 40 + 65 = 105°C), any exergy benefits from this increased ΔT were nullified. Thus 105°C would be the production temperature (for the initial case) that provides the maximum amount of exergy without unnecessarily increasing drilling costs.

This then raises the question of what the supply curves might look like if no such limit were placed on ΔT. To answer this question, twelve simulations were carried out on the full dataset under the initial learning phase assumptions evaluating production temperatures ranging from 75°C to 185°C (in 10°C increments) with no artificially imposed limit on maximum ΔT.

Figure 4.26 shows the resulting supply curves for each of the twelve production temperatures when no limit on ΔT was applied. As expected, the production temperatures resulting in the lowest LCOHs increase as a result of the increased exergy available with increased primary supply temperatures. However, even when no maximum ΔT is imposed there is still an optimum production temperature at every place at which LCOH is minimized. Only 8 of the 2894 places had optimal production temperatures of 185°C – the rest reached optimal production temperatures that minimized LCOH at temperatures of less than 185°C.

For the first 2000 MW_{th} the optimal production temperature falls in the range of 145-185°C. However, once 145°C is reached there is no noticeable difference in LCOH from increasing T_{prod} from 145°C to 185°C at these places. In fact, the only things increasing T_{prod} beyond 145°C would seem to accomplish would be 1) to reduce plant lifetime due to increased system temperature and pressure and 2) to necessitate deeper, riskier, and more difficult drilling.

Beyond these first 2000 MW_{th}, optimal T_{prod} gradually drops and eventually settles into the range of 125-145°C (i.e. the green and yellow colored curves in Figure 4.26). Again, there is almost no noticeable difference in LCOH within this range of production temperatures. For cumulative capacity in excess of 2000 MW_{th}, LCOH noticeably and significantly increases with increases in production temperature beyond 155°C. As can be seen in Figure 4.26 (beyond the first 5 GW_{th}), there is roughly a $1/MMBTU difference between the lowest possible LCOHs (associated with production temperatures in the 125-145°C – the green and yellow curves) and those associated with 185°C (the darkest red curve).

Therefore, it is clear that even without an imposed maximum on system-wide ΔT, optimum production temperature will reach a point at which further increases in T_{prod} will no longer result in benefits to LCOH, and will likely in fact only serve to increase LCOH.

There are several drawbacks to increasing production temperatures. First, increases in geofluid supply temperature will require distribution equipment (piping, pumps, heat exchangers, etc.) capable of handling increased temperatures and pressures, which represents increased costs. Increased supply temperatures also result in greater heat losses in the distribution network. Finally, in order to achieve higher production temperatures, one must drill deeper which means riskier, more difficult, and higher cost drilling.

As explained in section 3.4.1, the model developed in this thesis assumes network capital costs and heat losses based on the assumption of a specific type of piping and equipment designed to handle temperatures below 125°C. Additionally, quantifying the added risk of hotter, deeper drilling associated with higher production temperatures is difficult to do. Thus, as explained previously, the 65°C limit on ΔT was applied to 1) ensure the equipment assumptions made in the model remained valid and 2) to ensure that ΔT did not exceed realistic values (as determined by the most extreme known ΔT's for currently operating GDH systems). It should be noted that the difference between the optimal LCOH at each "place" *with* the 65°C ΔT limit (the base assumption) and the LCOH calculated at that "place" with ΔT unlimited (Figure 4.26) was on average only $0.44/MMBTU. The maximum observed difference between the two at a single place was $2.34/MMBTU, and the largest proportional change was 8.7%. Hence, even by allowing T_{prod} to increase drastically from 105°C to 185°C, the reduction in LCOH is typically much less than 10% while the corresponding increases to risk and equipment requirements remain unquantified.

Hence, even if it were realistically possible to achieve ΔT's much in excess of 65°C (without incurring added technology costs) it still remains dubious whether it would be an effective and prudent way to reduce LCOHs and increase the competitiveness of GDH.

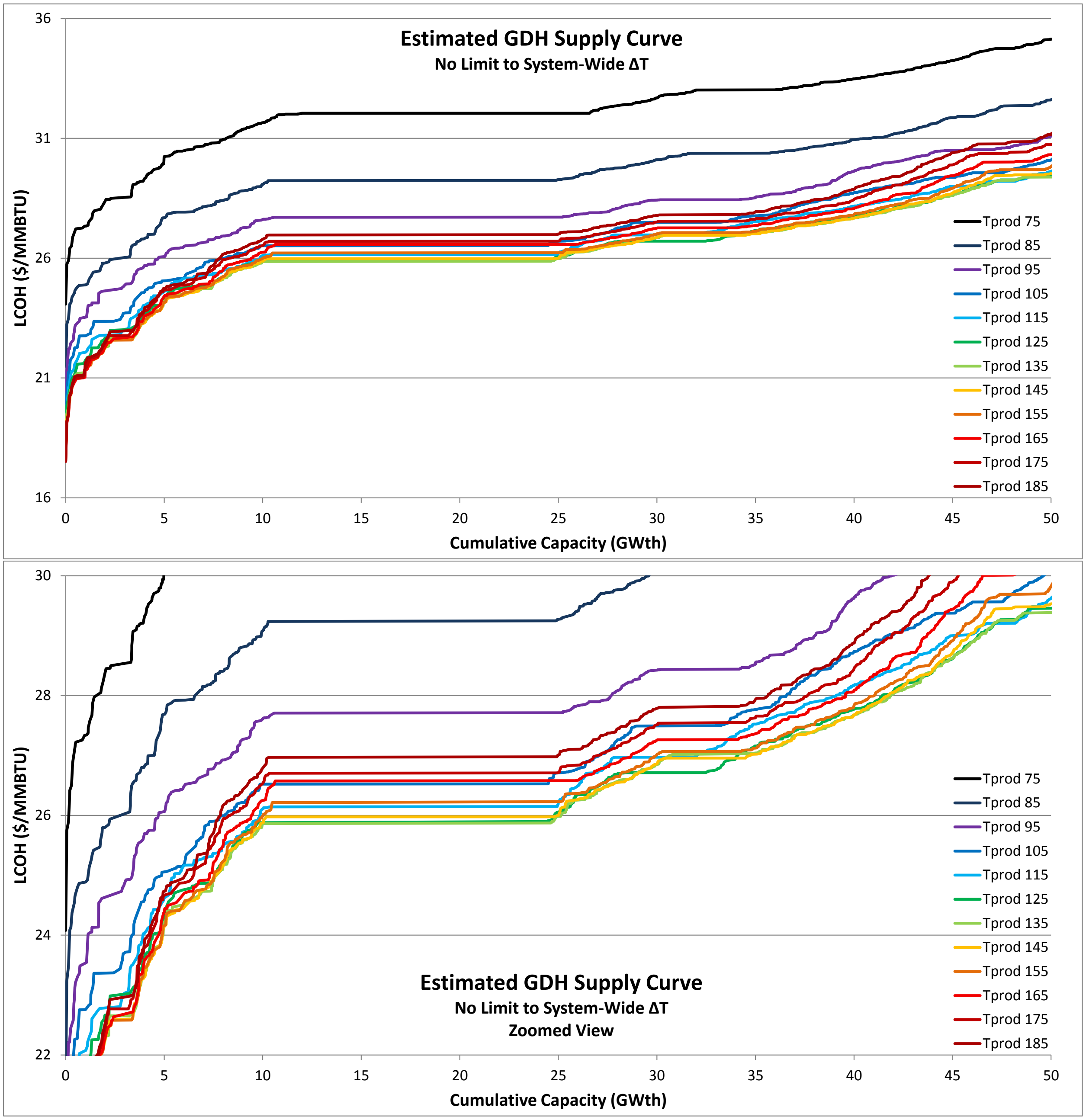


Figure 4.26 Supply curves (initial learning phase assumptions) at twelve production temperatures with unlimited system ΔT. Given no imposed limit on ΔT, increasing production temperature decreases LCOH up to a certain point, beyond which further increases in T_{prod} actually increase LCOH. From these figures one can see that for the cheapest 2000 MW_{th} the optimal T_{prod} falls in the range of 135-185°C, with absolutely no noticeable difference in LCOH between 135°C and 185°C. From 2000 MW_{th} and up, optimal T_{prod} gradually falls and eventually settles into the range of 125-145°C (green and yellow curves). Note that LCOH for the highest production temperatures (red curves) are actually higher than those for the lower production temperatures. Note also that the average difference between the lowest LCOHs in the figure (assuming unlimited ΔT) and the lowest LCOHs with the imposed 65°C limit on ΔT is only $0.44/MMBTU.

4.4.2 Targeting New Developments

The base cases (initial, midterm, mature) up to this point all operate with the underlying assumption that any GDH system will be deployed as a retrofit within an existing community. What about installing GDH systems in areas of new development? In a new development (i.e. subdivision extension, community redevelopment project, etc.), district heating piping can be installed before or concurrently with construction of the rest of the development. This can eliminate certain costs—such as tearing up existing streets, hauling away debris, repaving streets after the network is installed, and controlling traffic throughout the process—that are typically associated with retrofitted communities. Such costs can account for as much as 25% of the installed cost of a district heating network (Rafferty 1996). Additionally, if a community can be planned with district heating in mind, the layout of the community and the GDH system can be flexibly designed to minimize both the length of network required to serve the community and the branch distances required by individual buildings, for example by running networks through shared backyards rather than under streets and setting buildings further back in their lots.

Finally, many retrofits attempt to use existing secondary heating systems, such as hot water radiators (on older homes) or forced-air convection (on newer homes), which have specific operating temperatures. In fact this was a primary consideration when appropriate secondary temperatures (T_{ss} and T_{sr}) were chosen for the initial base case assumptions (section 3.3.3a). While older heating systems typically cannot effectively achieve return temperatures lower than 40°C, newer heating methods, such as under-floor heating or embedded panel heating, can achieve lower operating temperature regimes, such as 50/30 (T_{ss}/T_{sr}) (Skagestad and Mildenstein 2002). While the cost of retrofitting these newer, lower temperature heating systems into older buildings can be prohibitively high, in a new development these improved systems can easily be installed during construction, reducing overall return temperatures and significantly reducing the LCOH from GDH (as seen in section 4.3.7).

In order to estimate the LCOH of GDH were it initially deployed within new developments, the initial base case scenario was re-simulated with changes to several key assumptions, outlined in Table 4.14.

Table 4.14 Changes from the initial phase base case to evaluate new developments.

Parameter	Base Value	N.D. Value	Explanation
T_{ss}	70°C	50°C	Lower temperature space heating equipment available and easily installed
T_{sr}	40°C	30°C	
Branch Distance	35 m	30 m	Smarter routing and design of distribution network integrated into community plan
Road Coverage	75%	65%	

In addition to the changes listed, a new cost curve for distribution piping was calculated by omitting costs attributed by Rafferty (1996) to road cutting, hauling and removal, repaving, and traffic control. The resulting "new development" cost curve for piping was:

$$K_{pipe} = 76.04 \cdot D + 83.82 \tag{4.1}$$

where K_{pipe} is the total installed cost of piping ($/m) and D is the required pipe diameter (inches). Compare this curve to the cost curve used for the base cases from section 3.3.4a:

$$K_{pipe} = 80.08 \cdot D + 195.96 \tag{3.14}$$

With these adjusted inputs, an estimated supply curve for new developments was generated and is shown in Figure 4.27 for the top 5000 MW_{th}. The cumulative capacity shown for the new development curve reflects the current estimated heating demand (and thus reflects current population) at each place. Therefore the capacity shown for new developments will only be reached if each town either doubles in size due to new development or completely rebuilds from scratch, both of which are unlikely. As such, the cumulative capacity should be viewed more as a relative guideline for the size of each community and thus the likelihood that a new development of sufficient size to support a GDH plant might be constructed (e.g. a city of 50,000 is much more likely than a small town of 5,000 to add a 1500-person subdivision).

Because new developments will have some form of space and water heating regardless of the energy source, the LCOH of gas heating, including the capital cost of furnaces, was estimated to compare to the LCOH from GDH. Assuming a similar 30-year lifetime, 4% discount rate, a typical furnace cost of $2500/100,000 BTU/hr. capacity, and the same cost of heating with natural gas as assumed in the base case, the LCOH of heating with natural gas increases to \$15.90/MMBTU. In the base case scenarios gas furnaces were assumed to be already installed

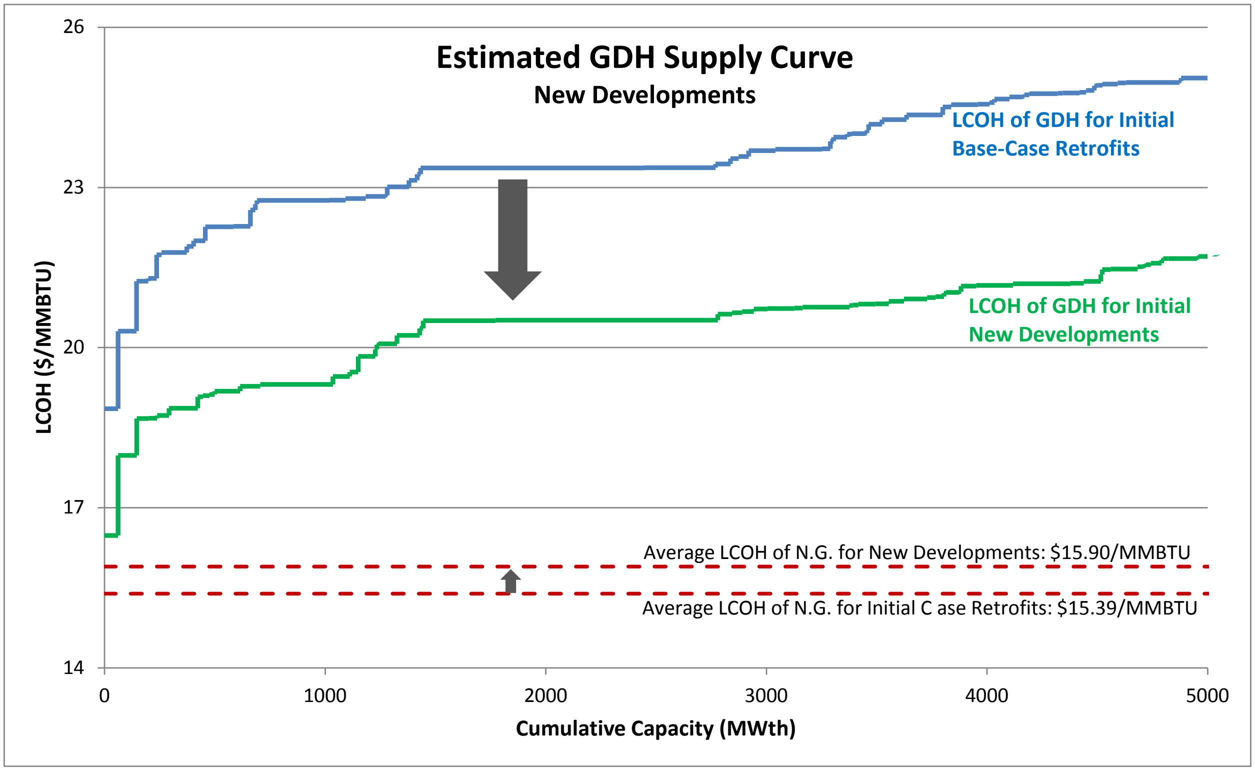


Figure 4.27 Supply curves for the lowest LCOHs comparing the initial phase retrofits (blue line) with initial phase new developments (green line). When creating a new development or redeveloping an area, the LCOH for GDH decreases and the cost of heating with natural gas increases, making GDH more attractive. Note that the cumulative capacity for the new development curve is based on the maximum current demand for each place and therefore does not represent any projected growth in population or heating demand.

in most homes and thus a sunk-cost, so it was assumed GDH would have to compete with only the annual fuel costs of gas heating. However, in a new development the cost of gas furnaces will be incurred if the developer opts for gas heating over GDH, and thus those costs must be included in the comparison.

Figure 4.27 shows that focusing on new developments during the initial phase of GDH deployment can significantly increase GDH's ability to compete with natural gas. If natural gas prices increase even by as little as a dollar/MCF at the wellhead (which is very likely to happen in the coming years), then GDH would make economic sense for new developments, today, in several communities in New York and Pennsylvania. Aging infrastructure across both states will likely require the redevelopment of many parts of New York and Pennsylvania's communities in the coming years. If and when this happens it will provide a prime opportunity to make the switch to geothermal district heating.

Although with today's current technology and gas prices, GDH for new developments remains somewhat more expensive than natural gas, new subdivisions and community redevelopment projects still provide excellent opportunities for GDH. By reducing the comparative LCOH of GDH versus natural gas and shrinking the gap, GDH systems in these areas enjoy more favorable economics, making these areas an ideal place to start.

4.4.3 Two-Phase Deployment Utilizing Existing Network Infrastructure

At the end of section 4.3.3 it was briefly mentioned that one potential strategy to ease the transition to EGS-based district heating may be to do it in two phases. District heating networks and all required surface equipment (i.e. heat exchangers, retrofits, etc.) could be installed today and operated initially with some other fuel, such as currently low-cost natural gas. This system could be operated as a natural gas-fired district heating system for some period of time, say 20 years.

After 20 years, once gas prices have escalated and EGS technology has reached a more mature stage, these systems could then be transitioned to what will then be lower-cost geothermal heat. With the distribution network and surface equipment already in place, the only costs incurred during this transition would be the cost of drilling and completing the EGS wells and reservoir and connecting the EGS system to the existing district heating infrastructure. Hence the surface capital costs would essentially be zero (though regular operation and maintenance costs would still apply). In this way the cost of GDH could be significantly reduced when it is finally adopted in the future – in this case in 20 years. Within the study region, Cornell University in Ithaca, NY and downtown Buffalo, NY, to name a few, both have existing district heating networks that could be converted to EGS in this manner in the near future.

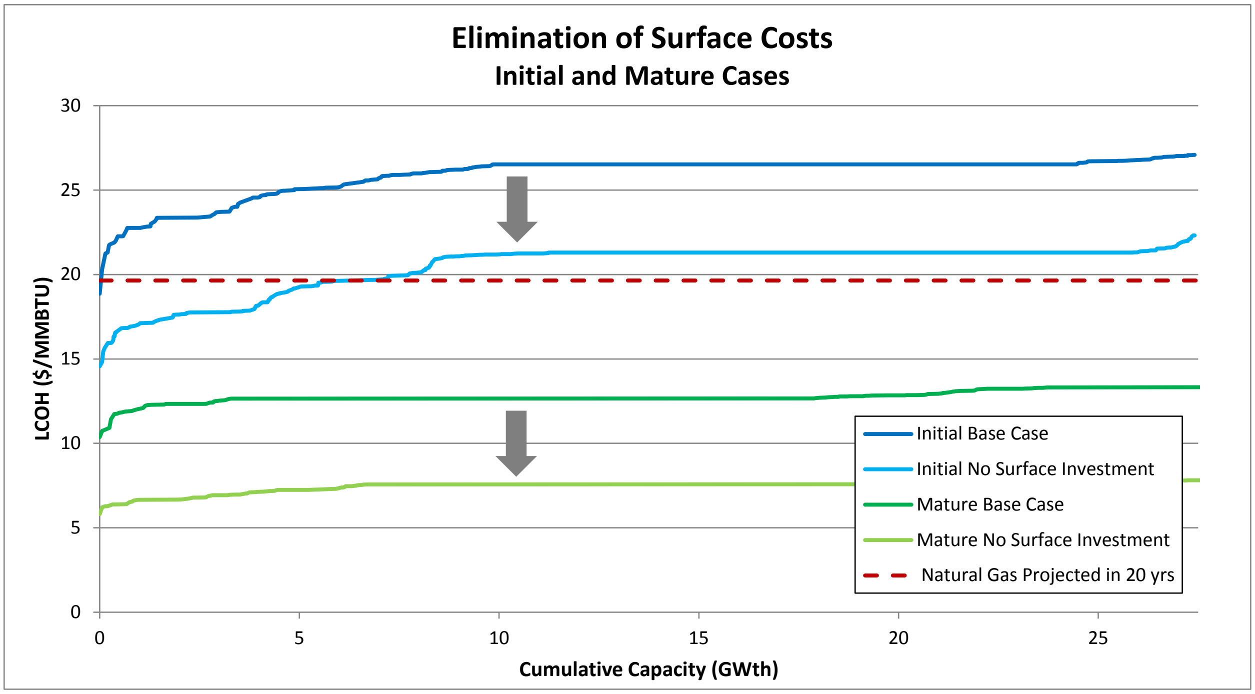


Figure 4.28 If EGS district heating can be retrofit into existing district heating networks then surface capital costs can essentially be eliminated, significantly reducing the overall LCOH. The blue lines represent the LCOH of GDH for the initial conditions under the base case (darker line) and assuming surface equipment is already in place (lighter line). The green lines show the same for the commercially mature conditions. As it is assumed that surface networks would be installed and operated for the first 20 years with some other fuel (e.g. natural gas) before geothermal fuel takes over, the projected natural gas price in 20 years is shown for comparison.

Figure 4.28 shows how this 2-phase transition strategy might affect the LCOH for GDH. It is clear that if EGS technology matures in the next 20 years and the "commercially mature" assumptions prevail, then the strategy described above could permit incredibly low GDH heating costs when geothermal is finally plugged in to existing networks (light green line).

Of greater interest, however, is what the blue lines in Figure 4.28 illustrate. The blue lines represent what might happen if the "initial" conditions for EGS technology still prevail in 20 years – that is to say, if *no* advances are made to EGS technology and the state of EGS in the future remains as it is today. Even in this extreme case, by adopting the 2-phase transition strategy described above, EGS district heating could still compete with prevailing natural gas prices of the day if it were retrofit into existing distribution networks 20 years from now (i.e. light blue line vs. dotted red line).

4.4.4 Effect of a Carbon Tax

One of the major benefits of GDH that is not reflected in its LCOH is its *nearly* zero-emissions when compared to gas heating. While geothermal energy technologies admittedly have some small levels of emissions associated with their development and operation, including CO_2, NO_x, SO_x and other greenhouse gasses, the emissions from a typical geothermal facility are usually in excess of three orders of magnitude (~1000x) *lower* than the emissions associated with fossil fuel alternatives (Tester et al. 2012). Unfortunately, it is difficult to quantify and incorporate this external environmental benefit into the LCOH of GDH.

Carbon taxes have received much attention in recent years as a viable method of incorporating the external environmental costs of our energy supply into the direct costs paid by energy users. In so doing, a carbon tax is a method of forcing energy consumers to realize the full cost of their energy use and to make appropriate decisions regarding energy. National carbon taxes have existed in Europe since the 1990's and in recent years have begun to take root at the state and provincial level in parts of North America, with taxes in Quebec and British Columbia in Canada and Colorado and California in the United States (Sumner et al. 2011). In Asia, too, several countries are currently debating a national carbon tax.

A typical carbon tax is levied on a basis of $/ton of carbon released, and may be implemented at any point of the energy supply chain: from extractors (i.e. mines and oil wells) to intermediary processors (i.e. electric utilities and refineries) to consumers (i.e. homes, industries and vehicles). Regardless of where in the chain the tax is implemented, the net effect will be similar: to increase the final cost per unit of energy consumed that results in the release of CO_2 to the atmosphere.

In terms of the real price of the carbon tax, it has been recommended that carbon initially be taxed at a low rate to avoid shocking the economy and then slowly be increased each year to provide regularity and predictability to investors. This approach has been used in British Columbia to great success (Elgie et al. 2012). In the United States suggestions vary, but many suggest an initial tax in the range of $10 to $20/metric ton of CO_2, that may then be ramped over the course of a decade or so (Sumner et al. 2011; Ramseur et al. 2012).

In order to estimate the effect a potential carbon tax may have on the competitiveness of GDH with natural gas, simulations were run assuming \$10 and \$20 carbon taxes. Assuming a CO_2 to energy ratio of 53 million metric tons of CO_2 per quadrillion BTU (Ramseur et al. 2012), and the absence of any other market forces (of which there are sure to be – that is the purpose of a carbon tax: to force the market one way or another), these carbon tax rates will increase the purchased price of natural gas by \$0.53/MMBTU and \$1.06/MMBTU, respectively. When the heating efficiencies of a typical furnace are factored in, the total estimated cost of heating with natural gas increases from \$15.39/MMBTU for the base case (zero tax) to \$16.06/MMBTU and \$16.72/MMBTU for \$10 and \$20/tonne carbon taxes, respectively.

Carbon taxes will affect more than simply the cost of natural gas against which GDH is competing. Electricity, a required input for pumping of working fluids, will also increase in price as it is still heavily dependent on fossil fuels. Given the particular fuels used to generate electricity in New York and Pennsylvania, their specific shares of the overall energy portfolio, the expected price increases for those fuels as a result of the carbon tax (from Ramseur et al. 2012), and some assumption regarding the efficiency with which those fuels are converted to electricity, the expected increase in electricity prices in New York and Pennsylvania was calculated as \$0.0042/kWh and \$0.0084/kWh for taxes of \$10 and \$20/tonne CO_2, respectively.

With these new carbon-taxed input prices for natural gas and electricity, new simulations were run. The results are presented in Figure 4.29. The impacts of these taxes were negligible on the LCOH of GDH, with even a \$20/tonne carbon tax increasing LCOHs for the top 200 places by only 0.4% on average. Because of this negligible impact only a single supply curve is shown in Figure 4.29. However, comparing the LCOH of GDH to the new costs of heating with natural gas under carbon tax conditions, it appears that even a \$20/tonne carbon tax is not projected to bring the cost of heating with natural gas up to a point high enough such that GDH retrofits (in the initial phase) are expected to be competitive in any communities today. In fact, a carbon tax of around \$50/tonne would be required to make GDH retrofits competitive today with natural gas in New York and Pennsylvania. It should be noted that a carbon tax may also increase many construction costs (e.g. transportation, cement, etc.) associated with EGS, and that these indirect tax effects were not included in this analysis.

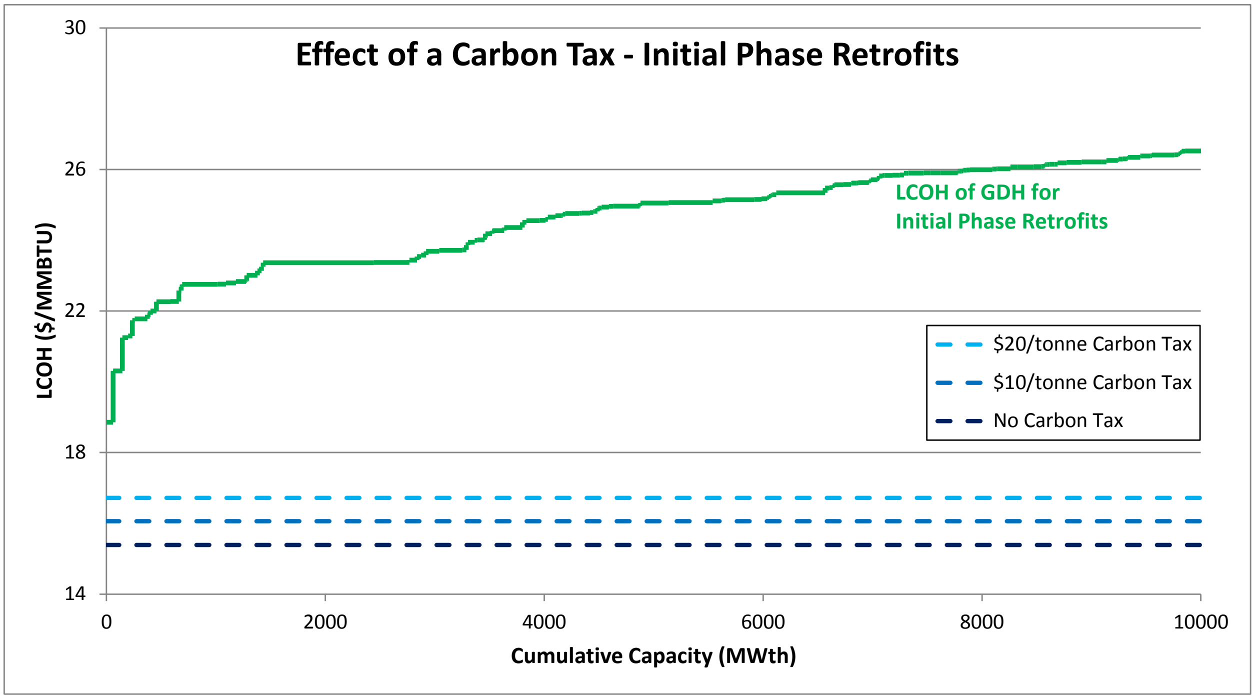


Figure 4.29 Effects of $10 and $20 carbon taxes on the estimated cost of heating with N.G. (blue dashed lines) against the LCOH of GDH with a carbon tax (solid green line). Note that the effect of even a $20/tonne carbon tax is negligible on the LCOH of GDH and hence only a single curve is shown. However, the taxes significantly raise the cost of heating with natural gas. Despite this, even a $20/tonne carbon tax is still not enough to bring natural gas heating costs up to a point where GDH can compete today.

However, as seen in section 4.4.2, GDH in areas of new development or redevelopment has the potential to be much more attractive. Figure 4.30 shows the effects of a carbon tax on GDH for new development. Again, the tax has a negligible effect on LCOH for GDH, increasing it on average by only 0.2%. However, in this case a carbon tax of $10/tonne would allow GDH in new developments to be competitive today for at least one community. Increasing the tax to $20/tonne could potentially expand the list to more communities. Hence combining GDH deployment in new developments with a carbon tax could be a viable strategy for making GDH competitive with natural gas today without having to wait for advances in EGS technology or cost reduction. This suggests that if and when a carbon tax is imposed, GDH could be immediately competitive in some communities.

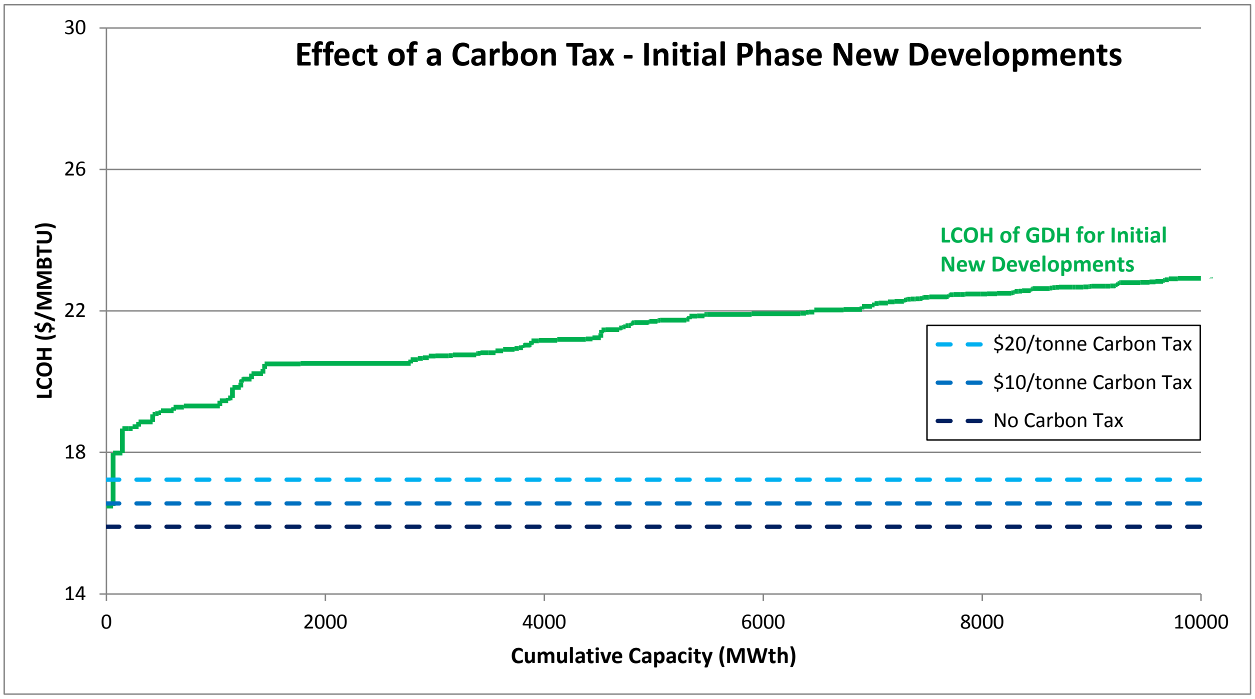


Figure 4.30 Effects of a carbon tax on GDH in new developments. A $10/tonne carbon tax would make GDH competitive with natural gas today for new developments in at least one community in New York and Pennsylvania. A $20 tax could make GDH for new developments potentially competitive in several additional communities.

4.4.5 Grants and/or Subsidies

A carbon tax is not the only to incentivize green technologies. There are currently dozens of grants and subsidies at the state and federal level available to clean energy installers. Currently, most renewable energy technologies enjoy some level of federal and often state incentives. These grants and tax credits typically apply to solar photovoltaics, solar thermal, hydroelectric, wind power, biomass, anaerobic digestion, geothermal electric, ground-source heat pumps, and more. While geothermal electric (at the commercial scale) and ground-source heat pumps (at the individual scale) are currently eligible for these incentives, **there are currently no similar incentives for geothermal district heating.**

In order to evaluate the effect such an incentive might have on GDH, a simulation was run assuming grants and/or tax credits would cover up to 30% of the capital cost of an EGS DH system. This level of support is typical of the grants currently offered at the federal level to cover investment costs of other renewable technologies. The results of this simulation are shown in Figure 4.31.

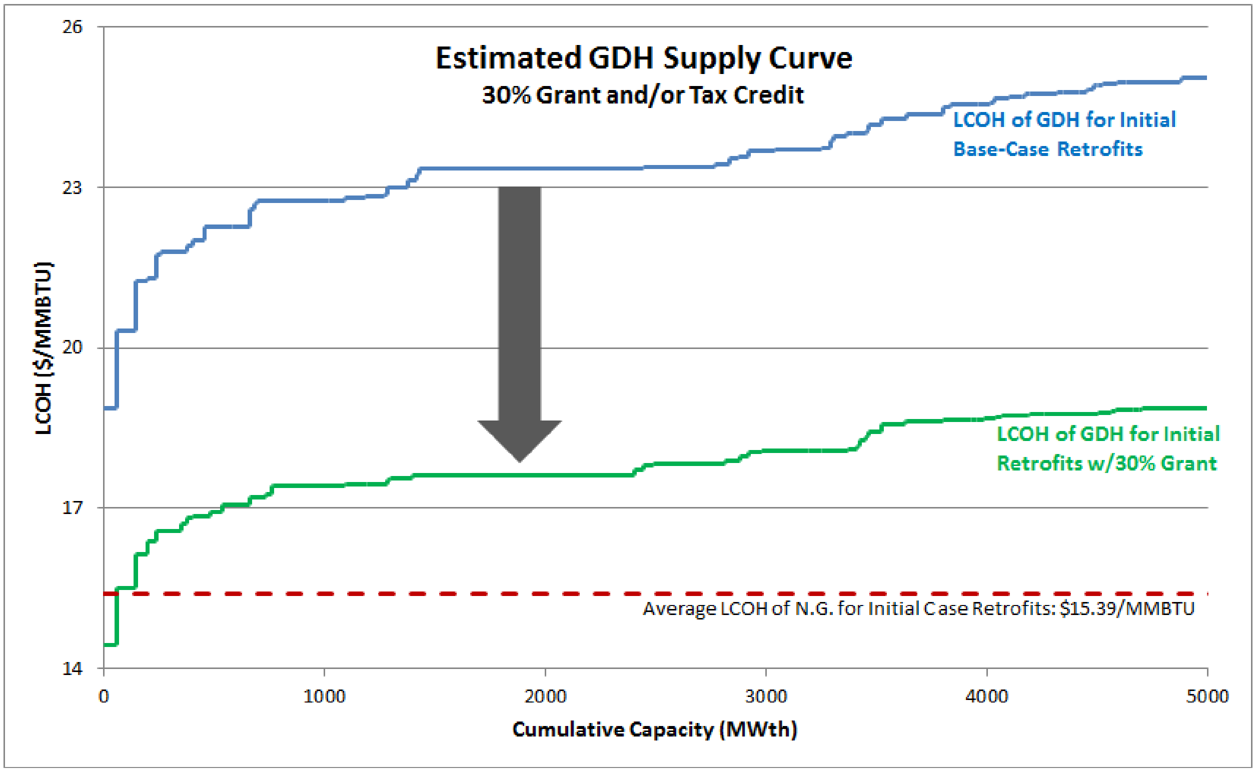


Figure 4.31 The LCOH of geothermal district heating could drop significantly if federal grants and/or tax credits picked up 30% of the capital cost, as they do for many other renewable technologies. In fact, such an incentive program could make some GDH retrofits immediately competitive in today's market.

Figure 4.31 shows that if federal grants, tax incentives, or other subsidies would pick up 30% of the capital cost, as they currently do for many other renewable technologies, then retrofitting GDH into some New York and Pennsylvania communities could be immediately competitive today. GDH in new developments under these conditions would then certainly be able to compete with natural gas in dozens of communities. Given that other renewables currently enjoy similar federal incentives, and considering the large exploration and production tax credits given to fossil fuel producers, it seems only reasonable that geothermal district heating should enjoy similar incentives. Such incentives could easily make GDH competitive with natural gas, today, for both retrofits and new developments.

4.5 Summary

District heating from Enhanced Geothermal Systems (EGS) has the potential to provide abundant, clean, cost-competitive space and water heating for New York and Pennsylvania in the near future (i.e. see Figures 4.3 and 4.4). If natural gas prices rise in the coming years as expected, GDH could potentially save New York and Pennsylvania energy consumers billions of dollars annually over alternative heating fuels. Even if this predicted price escalation does not occur and natural gas prices remain at their current historic low, EGS-based district heating will still be able to compete given realistic advances in technology.

However, it is apparent that GDH cannot compete with natural gas *today*, given the current state of EGS technology and today's low gas prices. In order to overcome this initial competition barrier and get EGS started moving down the learning curve (Figure 4.5), intervention may be required. EGS costs will have to come down, gas prices will have to spike, or, in the absence of either, somebody (e.g. local, state, or federal governments) will have to step in and provide financial backing to "jump-start" the technology.

The analysis in this chapter aimed to help provide insight into how the transition from natural gas heating to GDH might take shape and how to get it started. Combining estimates of space and water demand with detailed resource maps and a GDH model, all cities, towns and communities (i.e. "places") in New York and Pennsylvania were modeled to estimate the levelized cost of heat (LCOH) from GDH under three technology scenarios. This LCOH provided a means by which "places" could be compared relative to one another, and by which various technology factors could be evaluated.

Given EGS technology today (i.e. the "initial learning phase"), the locations of the "places" with the lowest relative LCOHs were identified and mapped (Figure 4.2). These are the best places to focus initial GDH deployment efforts – detailed feasibility studies, possibly pilot projects, and the like.

The population of a given "place" has the potential to significantly affect LCOH at that place, with populations below roughly 1500 people generally not creating enough heating demand to make even a single EGS doublet system economically viable (section 4.2.1). Once this 1500 person threshold is satisfied, however, population seems to have little effect on

LCOH. A similar trend occurs for population density, with the threshold occurring around 1000 persons/km^2 (section 4.2.2).

As expected, the geothermal gradient also very significantly affects LCOH, with higher gradients allowing lower LCOHs (section 4.2.3). Unfortunately, however, it is completely out of the power of GDH engineers to do anything about the geothermal gradient at a given location. However, exploring and characterizing geothermal resources can allow developers to exploit hot spots where they exist.

The magnitude of climate fluctuations also affects LCOH, with larger fluctuations reducing capacity factors and thus increasing LCOHs (section 4.2.4). Thus milder climates should generally be targeted for initial GDH deployment. The strength of this affect, however, is only marginal when compared to the strong effects of population and gradient.

Once identification of suitable places to start initial exploratory studies was complete, sensitivity analysis helped identify particular technology and cost variables that have the largest influence on LCOH, and thus helped identify factors that might provide the highest return on research and development investment (all of section 4.3). Early on, flow rate, drilling costs, lifetime, and secondary return temperature have the largest impact on LCOH and should be the focus on R&D efforts. It is also crucial to secure the lowest possible discount rates, which can be aided by increasing understanding of EGS district heating technology and reducing risk and uncertainty.

As the technology matures, surface costs overtake drilling costs as the largest portion of LCOH (due to increased flow rates – see section 4.3.2) and should be the focus of R&D during the later stages of development.

The strong effects of flow rate drop off as flow rates increase, and eventually an optimum flow rate is reached that minimizes LCOH – this occurs somewhere in the range of 60-100 kg/s. The effects of increases to system lifetime drop off similarly, though they level off asymptotically rather than reach minimum.

The effects of changes in demand are strong and inversely related to LCOH – reduced demand increases LCOHs. This complication makes demand management a tricky question as many sustainability efforts focus on reducing energy consumption through efficiency –

something that would seem to be at odds with promoting GDH deployment. However, this problem may be avoided by targeting peak demand periods for efficiency reductions while maintaining summer loads as they are, hopefully reducing demand without increasing LCOH.

Any technological solution to reduce the cost of GDH and increase its ability to compete with alternative heating methods will require both time and research investment before it is realized. However, there may be additional strategies that can be adopted to increase the competitiveness of GDH, *today,* without having to wait for the technology to advance. This may get GDH started down the learning curve sooner rather than later and accelerate its overall deployment.

Increasing the production temperature (i.e. primary supply temperature), even if it were realistic to achieve ΔT values in excess of 65°C, would only decrease LCOHs marginally (in some cases it may actually *increase* LCOHs) but would dramatically increase drilling risk and reduce equipment lifetimes. Hence, it is not the best available strategy for reducing LCOHs (4.4.1).

Focusing on new developments (or redevelopments) could increase competitiveness today by reducing installation costs and increasing the LCOH of natural gas heating (4.4.2). Similarly, imposing carbon tax would significantly increase the LCOH of natural gas while only negligibly affecting the cost of GDH (4.4.3). However, neither of these strategies alone would be enough to make EGS district heating immediately competitive today. Combining the two, however, would make GDH immediately competitive in today's market without necessitating technology advances or having to wait for natural rises in the price of natural gas.

Finally, a two-phase deployment strategy (section 4.4.4) could allow GDH to be competitive in the future by eliminating the capital cost of surface equipment. In this case, even if EGS technology remains stagnant for the next 20 years, it is expected it would still be competitive with prevailing natural gas prices of the day if it were retrofit into existing district heating networks 20 years from now. If the technology does mature over that time span, then retrofitting EGS into existing DH networks could produce some of the lowest cost space heating seen in decades.

The opportunities for EGS-based district heating are abundant and strategies for implementing GDH and increasing its competitiveness both today and in the future are abundant. It is now only a question of what time frame GDH deployment will occupy. One option is to wait for alternative heating prices to rise so much that GDH deployment will occur out of necessity – perhaps twenty or more years from now. However, it is much better to stay ahead of the curve rather than lag behind it. Hence the smarter option is to invest in GDH today so that the technology is ready and already widespread when it is finally called upon to heat our homes and business.

Chapter 5
Conclusions

The results of the modeling efforts presented in this thesis suggest several implications for the future development of Enhanced Geothermal System (EGS)-based district heating in New York and Pennsylvania. EGS district heating has the potential to displace a large portion of the fossil fuels (natural gas, propane, fuel oil, etc.) currently used for space and water heating in New York, Pennsylvania and elsewhere. GDH produces fewer greenhouse gasses and particulates and is more environmentally benign than most other heating methods, the benefits of which are difficult to fully incorporate into an economic comparison. Further, GDH permits additional unquantified savings over natural gas, such as reducing the amount of physical space required in homes/businesses for furnaces/boilers and the elimination of dedicated boiler staff in large commercial and industrial buildings. In the coming years, technological advances and escalating fuel prices will allow Geothermal District Heating (GDH) to supply abundant, clean, and cost-competitive heat.

However, in order for GDH to compete with today's low cost of natural gas (~$12/MMBTU purchased, or ~$15/MMBTU delivered), technological improvements to EGS district heating technology will be required. Some deployment strategies, such as targeting new developments (or redevelopment), imposing carbon taxes, or a two-phased deployment scheme utilizing existing district heating networks can increase the competitiveness of GDH without necessitating advances in technology.

While some factors are out of the hands of engineers and developers (i.e. the geothermal gradient, population, and climate fluctuations), others present significant opportunities for reducing the costs of GDH. **Research and engineering efforts should focus on increasing reservoir flow rates (up to ~80 kg/s), reducing drilling costs, increasing system lifetimes (up to 40+ years), and ensuring the lowest possible radiator set-points (thus minimizing secondary fluid return temperatures).** In later phases of development, efforts should be shifted to reducing capital costs associated with surface infrastructure.

By focusing on areas of new development or redevelopment, the LCOH of GDH can be reduced and the comparative LCOH of natural gas heating increased, improving the overall competitiveness of GDH. A carbon tax will increase the competitiveness of GDH relative to natural gas heating, though even a $20/tonne tax on carbon emissions will not be enough to make GDH retrofits immediately competitive. However, a carbon tax of this size could make GDH competitive in the case of new or re-development in several NY and PA communities, today, and thus help get GDH development started down the learning curve.

The results of this modeling exercise suggest that GDH will be competitive in the near future and may be economically competitive today in some communities under specific circumstances. However, further investigation is strongly recommended. There were several notable simplifications and assumptions in this investigation that could potentially complicate the results and must be resolved on a finer scale.

First, heat losses were incorporated only as a static temperature loss per unit length of distribution piping. While this may be an acceptable assumption for a regional study such as this, true temperature losses will vary with pipe diameter, fluid temperature, flow rate, and several other factors.

Second, to simplify the analysis space and water heating temperature requirements were assumed to be the same, which may not always be the case. In many situations space and water heating applications can be cascaded to make more efficient use of delivered heat, reduce required flow rates, and reduce secondary return temperatures.

Third, building density was assumed constant within each town or community modeled. This is almost certainly not the case as town centers tend to be denser than the outer fringes of towns. As such, a district heating system may be viable for a commercial downtown area but not for the residential outskirts of town. By averaging the density across an entire town, opportunities for GDH networks covering only a portion of a larger sized town may have been missed in this investigation.

Fourth, the model here only incorporated space and domestic hot water needs. Other heating applications, such as industrial or agricultural processes, greenhouses, snow melting, and others were not considered. In many cases, these heating applications can be cascaded in a district heating network to further reduce LCOH.

In addition to these, several other assumptions and simplifications were made, all of which can be found within the text of chapter 3. Detailed feasibility and modeling studies focusing on individual towns or communities will best be able to address these simplifications and obtain a clearer and more accurate picture of the true cost of GDH in each community. This study can help those studies, however, by pointing future investigations in the direction of the most promising towns in which to start—a primary goal of this thesis.

To identify candidate communities, investigators should look for communities with a population of at least 1500, a density of 1000 persons/km^2 or more, and the highest geothermal gradient possible (e.g. in excess of 30°C/km). Based on the geothermal resource and heating demand estimates in this study, **it is recommended that more detailed studies be undertaken in the towns of DuBois, Washington, Indiana, Somerset, Clarion, Greensburg, Corry, and Warren, Pennsylvania and in Auburn, Eggertsville, Williamsville, Cortland, and Ithaca, New York.** The appendix provides a full list of the base-case results of this study to give future investigators a starting point.

New York and Pennsylvania present opportunity for research, development, and deployment of Enhanced Geothermal Systems-based district heating in the near future. Presented in this thesis were a refined map of the available EGS resources and a model-based estimate for the cost of developing those resources in NY and PA. It is clear that with modest research and development efforts, EGS-based GDH has the potential to provide a significant portion of the heating needs of New York and Pennsylvania in a cost-effective and environmentally benign way. As communities and infrastructure in these two of the nation's oldest states age, they are beginning to require major revitalization and redevelopment efforts to update them for the twenty-first century. This redevelopment will provide the perfect opportunity to seamlessly integrate GDH into the region's communities. Doing so will help transform the aging communities of New York and Pennsylvania into some of the most resilient communities in the nation. It is critical that appropriate measures be taken today to ensure that GDH is up to the task when the time comes for it to take on the enlarged role that it can and must fill.

References

Chapter 1

Fox, D. B., Sutter, D., and Tester, J. W. (2011). The Thermal Spectrum of Low-Temperature Energy Use in the United States. *Energy and Environmental Science* (4): 3731-3740. DOI: 10.1039/C1EE01722E

Genter, A., Goerke, X., Graff, J. J., et al. (2010). Current Status of the EGS Soultz Geothermal Project.*Proceedings World Geothermal Congress 2010.* Bali, Indonesia, April 25-29, 2010.

Gunnlaugsson, E. (2008). District Heating in Reykjavik: Past – Present – Future. United Nations University Geothermal Training Programme, 30th Anniversary Workship. Reykjavik, Iceland. August 26-27, 2008.

Kiruja, J. (2011). Use of Geothermal Energy in Dairy Processing. United Nations University Geothermal Training Programme. Reykjavik, Iceland. Reports 2011, Number 16.

Lund, J. (2007). Characteristics, Development, and Utilization of Geothermal Resources. *Geo-Heat Center Bulletin.* June 2007.

Tester, J.W., et al. (2006). *The Future of Geothermal Energy: Impact of Enhanced Geothermal Systems (EGS) on the United States in the 21st Century.* Prepared for the United States Department of Energy by the Massachusetts Institute of Technology under contract DE-AC07-05ID14517, 2006.

Tester, J. W., Drake, E. M., Driscoll, M. J., Golay, M. W., and Peters, W. A. (2012). *Sustainable Energy: Choosing Among Options.*2nd ed. Cambridge, Massachusetts: The MIT Press.

Thorsteinsson, H. H. (2008). *U.S. Geothermal District Heating: Barriers and Enablers.* Master of Science Thesis, Engineering Systems. Massachusetts Institute of Technology.

U.S Department of Energy Office of Energy Efficiency and Renewable Energy. (2012). *Manufacturing Energy and Carbon Footprints.* Online at: http://www1.eere.energy.gov/manufacturing/resources/footprints.html

US Energy Information Agency. (2012). *Annual Energy Review 2011.* Septemeber 2012. DOE/EIA-0384(2011). Online at: www.eia.gov/aer

Chapter 2

AAPG. (1978). Basement map of North America. The American Association of Petroleum Geologists, scale 1:5,000,000.

Beardsmore, G. R. and Cull, J. P. (2001). Crustal Heat Flow: A Guide to Measurement and Modeling. New York: Cambridge University Press. Print.

Blackwell, D. D. and Richards, M. C. (2004). “Geothermal map of North America.” The American Association of Petroleum Geologists, 1 sheet, scale 1:6,500,000.

Blackwell, D. D., Negraru, P. T., and Richards, M. C. (2007). “Assessment of the Enhanced Geothermal System Resource Base of the United States.” *Natural Resources Research* (15): 283-308.

Bullard, E. C. (1947). “The Time Necessary For a Borehole to Attain Temperature Equilibrium.” *Geophysical Journal International* (5): 127-130.

Childs, C. (2004). “Interpolating Surfaces in ArcGIS Spatial Analyst.” *ArcUSER*, July-September 2004, 32-35.

Deming, D. (1989). “Application of Bottom-Hole Temperature Corrections in Geothermal Studies.” *Geothermics* (18): 775-786.

Deming, D. and Chapman, D. S. (1988). “Heat Flow in the Utah-Wyoming Thrust Belt from analysis of bottom-hole temperature data measured in oil and gas wells.” *Journal of Geophysical Research* (93): 13657-13672.

Fox, D. B., Sutter, D. and Tester, J. W. (2011). “The Thermal Spectrum of Low-Temperature Energy Use in the United States.” *Energy and Environmental Science* 4(10): 3731-3740.

Frone, Z. and Blackwell, D. D. (2010). “Geothermal Map of the Northeast United States and the West Virginia Thermal Anomaly.” *Geothermal Resources Council Transactions* (34): 308-312.

Gallardo, J., and D. D. Blackwell (1999), “Thermal Structure of the Anadarko Basin, Oklahoma,” *American Association of Petroleum Geologists Bulletin* 83(2): 333-361.

Harrison, W. E., et al. (1983). “Geothermal resource assessment of Oklahoma.” Special Publication 83-1, Oklahoma Geological Survey.

Horner, D. R. (1951). “Pressure Build-up in Wells.” *3rd World Petroleum Congress*, The Hague, NL, World Petroleum Congress, May 28 – June 6, 1951.

Kehle, R. O. (1972). “Geothermal Survey of North America.” 1972 Annual Progress Report for the American Association of Petroleum Geologists, 23. 1973.

New York State Department of Environmental Conservation (NYSDEC). (2011). “Oil and Gas Searchable Database.” Retrieved February 2011 from <http://www.dec.ny.gov/cfmx/extapps/GasOil/search/wells/index.cfm>.

Orlo, E. C., et al. (1985). “Correlation of stratigraphic units in North America: Correlation chart series.” The American Association of Petroleum Geologists.

Pollack, H. N., et al. (1993). “Heat Flow from the Earth’s Interior: Analysis of the Global Data Set.” *Reviews of Geophysics* 31(3): 267-280.

Shope, E. N. (2012). “A Detailed Approach to Low-Grade Geothermal Resources in the Appalachian basin of New York and Pennsylvania: Heterogeneities Within the Geologic Model and Their Effect on Geothermal Resource Assessment.” Master of Science Thesis, Cornell University, August, 2012.

Spicer, H. C. (1964). “A compilation of deep Earth temperature data: USA 1910-1945.” U.S. Geological Survey Open File Report, 64-147.

Stutz, G. R., et al. (2012). “A Well by Well Method for Estimating Surface Heat Flow to Analyze the Geothermal Energy Resource Potential of the United States.” *37th Stanford Geothermal Workshop*, Stanford, CA, January 30 – February 1, 2012. (In Press)

Tester, J. W., et al. (2010). “Co-Generation Opportunities for Lower Grade Geothermal Resources in the Northeast – A Case Study of the Cornell Site in Ithaca, NY.” *Geothermal Resources Council Transactions*, 34, 440-448.

Chapter 3

Augustine, C., Young, K. R., and Anderson, A. (2010). “Updated U.S. Geothermal Supply Curve,” *35th Stanford Geothermal Workshop,* Stanford, CA, February 1, 2010.

Augustine, C. (2011). “Updated U.S. Geothermal Supply Characterization and Representation for Market Penetration Model Input,” National Renewable Energy Laboratory Technical Report, NREL/TP-6A20-47459, October, 2011.

Beckers, K. B., Lukawski, M. Z., Reber, T. J., Anderson, B. J., and Tester, J. W. (2013). “Introducing GEOPHIRES v1.0: Software Package for Estimating Levelized Cost of Electricity and/or Heat from Enhanced Geothermal Systems.” *38th Stanford Geothermal Workshop,* Stanford, CA, February 11-13, 2013. SGP-TR-198

BioRegional Devleopment Group. (2012). *Retrofitting District Heating Systems.* BioRegional Solutions for Sustainability. Funded by the Climate Change Collaboration. April 2012.

Brown, B. (2007). “Klamath Falls Geothermal District Heating System at 25 Years.” GHC Bulletin, June 2007.

Census Bureau. (2007). 2007 North American Industry Classification System. Accessed online July 15, 2012. www.census.gov/cgi-bin/sssd/naics/naicsrch?chart=2007

Census Bureau. (2011a). 2011 TIGER/Line Shapefile Database. Accessed online July 16, 2012. www.census.gov/geo/www/tiger/tgrshp2011/tgrshp2011.html

Census Bureau. (2011b). American Community Survey 5-year Estimates. Accessed online via American Fact Finder July 17, 2012. factfinder2.census.gov/faces/nav/jsf/pages/index.xhtml

Census Bureau. (2011c). 2007 Economic Census. Accessed online via American Fact Finder July 12, 2012. factfinder2.census.gov/faces/nav/jsf/pages/index.xhtml

Census Bureau. (2012). “Census 2000 Geographic Definitions.” Revised March 2012.Accessed online October 18, 2012. www.census.gov/geo/www/geo_defn.html

Consortium for Energy Efficiency. (2001). *A Market Assessment for Condensing Boilers in Commercial Heating Applications.* Consortium for Energy Efficiency. One State Street, Suite 1400, Boston, MA 02109.

EIA. (2001). 2001 Residential Energy Consumption Survey. Table CE2-6.2u and CE4-6.2u. Accessed online July 14, 2012. www.eia.gov/consumption/residential/data/2001/index.cfm?view=consumption

EIA. (2006). 2003 Commercial Buildings Energy Consumption Survey. Tables B1, B19, C3, and E2. Accessed online July 12, 2012. www.eia.gov/emeu/cbecs/cbecs2003/detailed_tables_2003/detailed_tables_2003.html

EIA. (2009). 2009 Residential Energy Consumption Survey. Table HC10.10. Accessed online July 11, 2012. www.eia.gov/consumption/residential/data/2009/

EIA. (2012). Description of CBECS Building Types. Accessed online July 15, 2012. www.eia.gov/emeu/cbecs/building_types.html

EIA. (2012b). Electric Power Monthly. September 2012 issue.

EIA. (2012c). Natural Gas Prices. Accessed online on October 20, 2012. http://www.eia.gov/dnav/ng/ng_pri_sum_dcu_nus_m.htm

Genter, A., Goerke, X., Graff, J. J., et al. (2010). "Current Status of the EGS Soultz Geothermal Project." *Proceedings World Geothermal Congress 2010.* Bali, Indonesia, April 25-29, 2010.

Gustaffson, J., Delsing, J., and van Deventer, J. (2008). "Thermodynamic Simulation of a Detached House with District Heating Subcentral." SysCon 2008 – IEEE International Systems Conference. Montreal, Canada, April 7-10, 2008.

Hijmans, R.J., S.E. Cameron, J.L. Parra, P.G. Jones and A. Jarvis. (2005). Very high resolution interpolated climate surfaces for global land areas. University of California, Berkeley. Accessed online July 15, 2012. www.worldclim.org

Karlsson, T. and Ragnarsson, A. (1995). "Use of Very Low Temperature Geothermal Water in Radiator Heating Systems." Proc. World Geothermal Congress '95, *Florence, Italy*, Vol. 3 (1995), pp. 2193–2198.

Kitsou, O. I., Herzog, H. J., and Tester, J. W. (2000). "Economic Modeling of HDR Enhanced Geothermal Systems." *Proceedings World Geothermal Congress 2000.*Kyushu – Tohoku, Japan, May 28 – June 10, 2000. 3779-3784.

Lienau, P. J (ed.), Lunis, B. C., Culver, G., Rafferty, K., et al. (1998). *Goethermal Direct Use Engineering and Design Guidebook.* Oregon Institute of Technology, 3rd ed. Chapters 10-12.

Ljunggren, P. and Wollerstrand, J. (2006). "Optimim Performance of Radiator Space Heating Systems Connected to Achieve Lowest Possible District Heating Return Temperature." 10th International Symposium on District Heating and Cooling. September 3-5, 2006.

Lukawski, M. (2010). *Optimization of the Operation of Space Heating Systems Connected to District Heating for an Improved Cooling of the Primary Water.* Master of Science Thesis. AGH University of Science and Technology, Krakow.

Myhren, J. A. and Holmberg, S. (2009). "Design Considerations with Ventilation-Radiators: Comparisons to Traditional Two-Panel Radiators." *Energy and Buildings* (41): 92-100.

Petitjean, R. (2004). *Total Hydronic Balancing: A Handbook for Design and Troubleshooting of Hydronic HVAC Systems.* Tour and Andersson AB, Ljung, Sweden, 3rd ed. Table 1.4, p 37.

Rafferty, K. (1996). "Selected Cost Considerations for Geothermal District Heating in Existing Single-Family Residential Areas." Geo-Heat Center Bulletin, August 1996. p 10-15.

Rafferty, K. (2003). “The Economics of Connecting Small Buildings to Geothermal District Heating Systems.” Geo-Heat Center Bulletin, March 2003. p 4-8.

Rushing, A. S., Kneifel, J. D., and Lippiatt, B. C. (2011). *Energy Price Indices and Discount Factors for Life-Cycle Cost Analysis – 2011.* Annual Supplement to NIST Handbook 135 and NBS Special Publication 709. U.S. Department of Commerce Technology Administration National Institute of Standards and Technology. September 2011. NISTIR 85-3273-26.

Ryan, G. P. (1981). “Equipment Used in Direct Heat Projects.” *Geothermal Resources Council Transactions.* October 1981, (5):483-486.

Schmitt, F. and Hoffman, H. W. (2002). *District Heating Network Operation.* International Energy Agency Programme of Research, Development and Demonstration on District Heating and Cooling. Annex VI. ISBN 90-5748-023-9.

Shaalan, H. E. (2001). “Generation of Electric Power.” Chapter 8 from *Handbook of Electric Power Calculations*. Beaty, H. W., editor. 3rd edition. McGraw-Hill. 2001.

Short, W., Packey, D. J., and Holt.T. (1995). *A Manual for the Economic Evaluation of Energy Efficiency and Renewable Energy Technologies.* National Renewable Energy Laboratory. March 1995. NREL/TP-462-5173.

Skagestad, B. and Mildenstein, P. (2002). *District Heating and Cooling Connection Handbook.* International Energy Agency Programme of Research, Development and Demonstration on District Heating and Cooling. Annex VI. ISBN 90-5748-026-3.

Tester, J.W., et al. (2006). *The Future of Geothermal Energy: Impact of Enhanced Geothermal Systems (EGS) on the United States in the 21st Century.* Prepared for the United States Department of Energy by the Massachusetts Institute of Technology under contract DE-AC07-05ID14517, 2006.

Thorsteinsson, H. H. (2008). *U.S. Geothermal District Heating: Barriers and Enablers.* Master of Science Thesis, Engineering Systems. Massachusetts Institute of Technology.

Williams, C.F.; Reed, M.J.; Mariner, R.H.; DeAngelo, J.; Galanis, S.P.J. (2008). *Assessment of Moderate- and High-Temperature Geothermal Resources of the United States*. U.S. Geological Survey Fact Sheet 2008-3082. U.S. Department of Interior.

Zhu, J. and Zhang, W. (2004). “Optimization Design of Plate Heat Exchangers (PHE) for Geothermal District Heating Systems.” *Geothermics* (33):337-347.

Zinko, H., Bohm, B., Kristjansson, H., et al. (2008). *District Heating Distribution in Areas with Low Heat Demand Density.*IEA-Report. IEA-DHC Annex VIII, 2008:8DHC – 08-03.

Chapter 4

Augustine, C., Tester, J. W., and Anderson, B. (2006). "A Comparison of Geothermal With Oil and Gas Well Drilling Costs." *31st Stanford Geothermal Workshop,* Stanford, CA, January 30-February 1, 2006. SGP-TR-179.

Augustine, C., Young, K. R., and Anderson, A. (2010). "Updated U.S. Geothermal Supply Curve," *35th Stanford Geothermal Workshop,* Stanford, CA, February 1, 2010.

Augustine, C. (2011). "Updated U.S. Geothermal Supply Characterization and Representation for Market Penetration Model Input," National Renewable Energy Laboratory Technical Report, NREL/TP-6A20-47459, October, 2011.

EIA. (2012c). Natural Gas Prices. Accessed online on October 20, 2012. http://www.eia.gov/dnav/ng/ng_pri_sum_dcu_nus_m.htm

EIA. (2012d). *Annual Energy Review 2011*. September 2012. DOE/EIA-0384(2011).

Elgie, S., et al. (2012). *British Columbia's Carbon Tax Shift: The First Four Years.* University of Ottawa: Sustainable Prosperity Research Report. June 27, 2012.

Greening, L. A., Greene, D. L., and Difiglio, C. (2000). "Energy Efficiency and Consumption – The Rebound Effect – A Survey." *Energy Policy* (28): 389-401.

Hanley, N., McGregor, P. G., Swales, J. K., and Turner, K. (2009). "Do Increases in Energy Efficiency Improve Environmental Quality and Sustainability?" *Ecological Economics* (68): 692-709.

Herring, H. (2006). "Energy Efficiency—A Critical View." *Energy* (31): 10-20.

Lukawski, M. (2012). Personal communication.

Rafferty, K. (1996). "Selected Cost Considerations for Geothermal District Heating in Existing Single-Family Residential Areas." Geo-Heat Center Bulletin, August 1996. p 10-15.

Rafferty, K. (2003). "The Economics of Connecting Small Buildings to Geothermal District Heating Systems." Geo-Heat Center Bulletin, March 2003. p 4-8.

Ramseur, J. L., Leggett, J. A., and Sherlock, M. F. (2012). *Carbon Tax: Deficit Reduction and Other Considerations.* Congressional Research Service Report for Congress. September 17, 2012. Congressional Research Service report R42731.

Skagestad, B. and Mildenstein, P. (2002). *District Heating and Cooling Connection Handbook.* International Energy Agency Programme of Research, Development and Demonstration on District Heating and Cooling. Annex VI. ISBN 90-5748-026-3.

Sumner, J., Bird, L., and Dobos, H. (2011). "Carbon Taxes: A review of Experience and Policy Design Considerations." *Climate Policy* (11): 922-943. 2011.

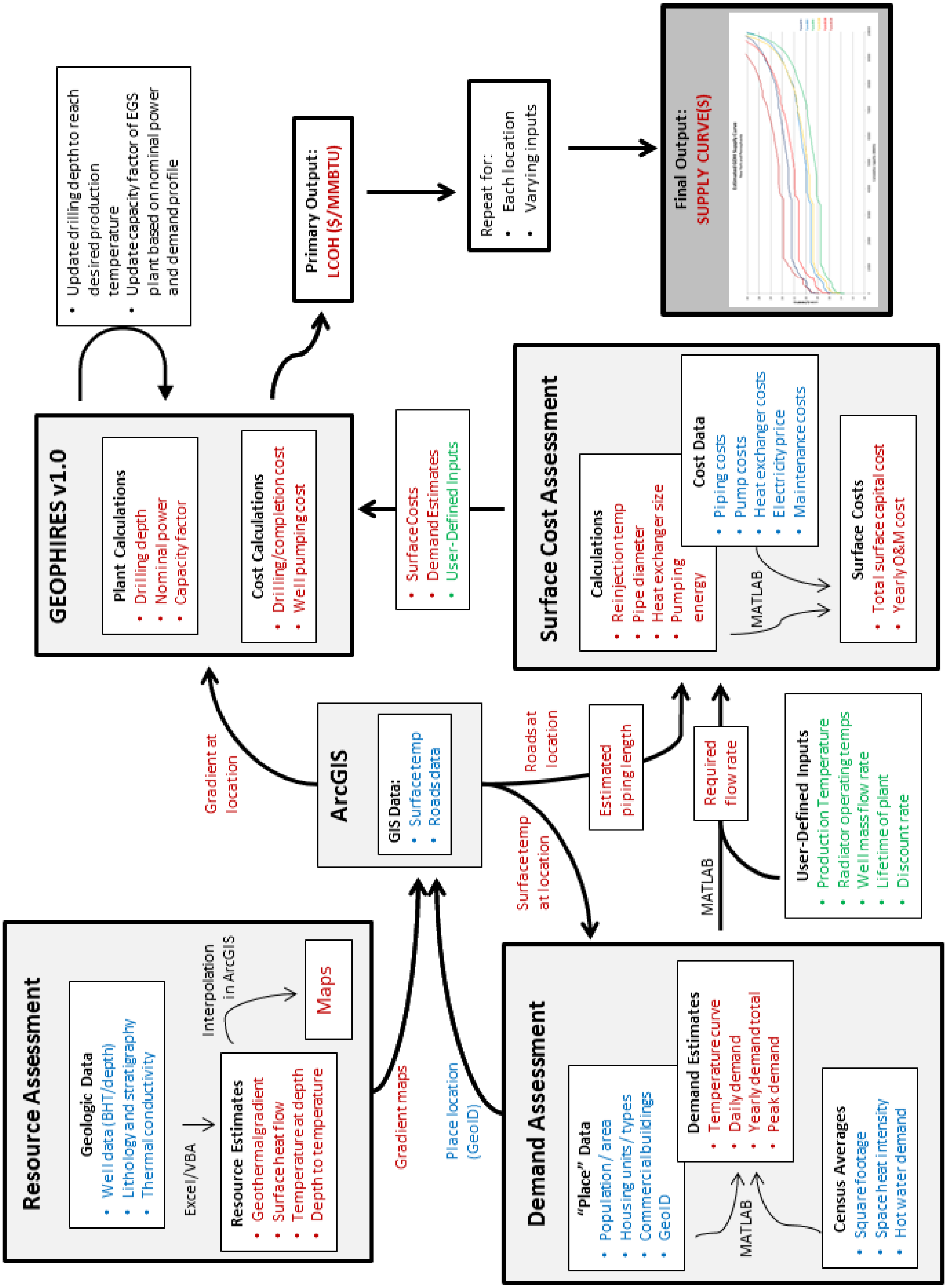
Tester, J.W., et al. (2006). *The Future of Geothermal Energy: Impact of Enhanced Geothermal Systems (EGS) on the United States in the 21st Century.* Prepared for the United States Department of Energy by the Massachusetts Institute of Technologyunder contract DE-AC07-05ID14517, 2006.

Tester, J. W., Drake, E. M., Driscoll, M. J., Golay, M. W., and Peters, W. A. (2012). *Sustainable Energy: Choosing Among Options.* 2nd ed. Cambridge, Massachusetts: The MIT Press.

United States Census Bureau. (2012). State and County Quick Facts. Accessed online December 5, 2012. http://quickfacts.census.gov/qfd/states/36000.html

Appendix

Appendix A: Model Workflow Diagram (enlarged reproduction of Figure 3.1)



Appendix B: Main MATLAB Shell Code

The following 705 lines of MATLAB code comprise primary executable MATLAB shell code used in this study.

```matlab
%% Main MATLAB Shell Code %%

%Run simulation assuming separate network for each GDH plant
clear all
close all


tic
for b = 1:3

%% 1 Input Parameters
% -------------------

%Fixed Parameters to be chosen
WellSeparation = 500;           %Seperation of wells [m]
Ramey = 1;                      %1: Use Ramey's model for temperature drop in production well and temperature increase in injection well;
                                %0: Take constant temperature drop in production well, no temperature inrease in production well
Newcosts = 1;                   %1: Take Maciek's latest drilling costs; 0: take the 2004 drilling costs
Poweroption = 2;                %1: 100% electricity; 2: 100% heat (3:CHP (under construction))
FACR = 0.06;                    %Fixed annual charge rate
Printoutput = 1;                %Print extended output data
BranchDistance = 35;            %Assumed average distance of service lines to buldings from main distribution network [m]
RoadCoverage = 0.75;            %Proportion of roads in town with main distribution piping
networkservice = 7.65;          %2012 $/m of network (incl. substation service)
discount = 0.04;                %discount rate
GFmaxDT = 65;                   %Assumed primary fluid maximum delta T (Tprod - Tinj)
dmult = 1.00;                   %Demand multiplier
gradmult = 1.00;                %Gradient multiplier

if b==1
        dmult = 1.00;                   %Demand multiplier
        drillmult = 1.00;               %Drilling cost multiplier
        stimmult = 1.00;                %Stimulation cost multiplier
        surfmult = 1.00;                %Surface cost multiplier
        opmult = 1.00;                  %All O&M cost multiplier
        pumpeff = 0.80;                 %Pump effiency
        boilereff = 0.85;               %Boiler efficiency
        LifetimePlant = 30;             %Lifetime technology
        payback = LifetimePlant;
        Tss = 70;                       %Secondray supply temp
        Tsr = 40;                       %Secondray return temp
        Tpinch = 3.0;                   %Pinch temp
        WellFlowRate = 30;              %Well flow rate
        U0 = 5000;                      %Design U-value [W/m2*C]
        GasPrice = 7.51;                %Natural gas for industrial consumers
        ptvect = [75 85 95 105 115 125];
        nvect = 1:6;
    outname = 'MAIN OUTPUT Initial.xlsx';
elseif b==2
```

```
        dmult = 1.00;                   %Demand multiplier
        drillmult = 0.90;               %Drilling cost multiplier
        stimmult = 0.90;                %Stimulation cost multiplier
        surfmult = 0.95;                %Surface cost multiplier
        opmult = 0.95;                  %All O&M cost multiplier
        pumpeff = 0.85;                 %Pump effiency
        boilereff = 0.90;               %Boiler efficiency
        LifetimePlant = 30;             %Lifetime technology
        payback = LifetimePlant;
        Tss = 60;                       %Secondray supply temp
        Tsr = 35;                       %Secondray return temp
        Tpinch = 2.5;                   %Pinch temp
        WellFlowRate = 50;              %Well flow rate
        U0 = 5500;                      %Design U-value [W/m2*C]
        GasPrice = 8.26;               %Natural gas for industrial consumers
        ptvect = [75 85 95 105 115 125];
        nvect = 1:6;
    outname = 'MAIN OUTPUT Midterm.xlsx';
elseif b==3
        dmult = 1.00;                   %Demand multiplier
        drillmult = 0.85;               %Drilling cost multiplier
        stimmult = 0.85;                %Stimulation cost multiplier
        surfmult = 0.90;                %Surface cost multiplier
        opmult = 0.90;                  %All O&M cost multiplier
        pumpeff = 0.85;                 %Pump effiency
        boilereff = 0.90;               %Boiler efficiency
        LifetimePlant = 30;             %Lifetime technology
        payback = LifetimePlant;
        Tss = 50;                       %Secondray supply temp
        Tsr = 30;                       %Secondray return temp
        Tpinch = 1.5;                   %Pinch temp
        WellFlowRate = 80;              %Well flow rate
        U0 = 6000;                      %Design U-value [W/m2*C]
        GasPrice = 10.51;               %Natural gas for industrial consumers
        ptvect = [75 85 95 105 115 125];
        nvect = 1:6;
    outname = 'MAIN OUTPUT Mature.xlsx';
end

%%DON'T FORGET TO CHECK DemandFcn AND DistcostFcn FOR CHANGES TOO!!!!%%

%% 2 ArcGIS Data
% ------------

[~,~,INPUTraw] = xlsread('INPUT TABLE STATIC.xlsx');        %Read .xlsx - only using Matlab
%[INPUTraw] = csvread('INPUT TABLE STATIC.csv');                        %Read .csv - for use with GNU Octave

NoCases = length(INPUTraw(2:end,1));

Place GeoID = cell2mat(INPUTraw(2:end,3));
TaveAnnual = cell2mat(INPUTraw(2:end,5));
TminJan = cell2mat(INPUTraw(2:end,6));
TminAbs = cell2mat(INPUTraw(2:end,7));
```

```
vectorRes = cell2mat(INPUTraw(2:end,8));
vectorAFS = cell2mat(INPUTraw(2:end,9));
vectorASW = cell2mat(INPUTraw(2:end,10));
vectorAER = cell2mat(INPUTraw(2:end,11));
vectorEdu = cell2mat(INPUTraw(2:end,12));
vectorHCSA = cell2mat(INPUTraw(2:end,13));
vectorInf = cell2mat(INPUTraw(2:end,14));
vectorMfg = cell2mat(INPUTraw(2:end,15));
vectorPST = cell2mat(INPUTraw(2:end,16));
vectorRERL = cell2mat(INPUTraw(2:end,17));
vectorRet = cell2mat(INPUTraw(2:end,18));
vectorWhsl = cell2mat(INPUTraw(2:end,19));
vectorOth = cell2mat(INPUTraw(2:end,20));
P_elec = cell2mat(INPUTraw(2:end,21));
L_road = cell2mat(INPUTraw(2:end,22));
GradientVector = cell2mat(INPUTraw(2:end,23));
ResBldgVector = cell2mat(INPUTraw(2:end,26));
ResUnitVector = cell2mat(INPUTraw(2:end,27));
ComBldgVector = cell2mat(INPUTraw(2:end,28));
ComUnitVector = cell2mat(INPUTraw(2:end,29));
DetachedVector = cell2mat(INPUTraw(2:end,30));
AttachedVector = cell2mat(INPUTraw(2:end,31));
Vector2_4 = cell2mat(INPUTraw(2:end,32));
Vector5_19 = cell2mat(INPUTraw(2:end,33));
Vector20_49 = cell2mat(INPUTraw(2:end,34));
Vector50_plus = cell2mat(INPUTraw(2:end,35));
SqFtUnitVector = cell2mat(INPUTraw(2:end,36));
TaveJan = cell2mat(INPUTraw(2:end,37));

COHMATRIX = cell(NoCases,7);
MAXPOWERMATRIX = cell(NoCases,7);
CAPACITYFACTORMATRIX = cell(NoCases,7);
TOTALNUMBERPLANTSMATRIX = cell(NoCases,7);
DRILLINGCOSTMATRIX = cell(NoCases,7);
DISTRICTHEATINGCOSTMATRIX = cell(NoCases,7);
NETANNUALHEATMATRIX = cell(NoCases,7);
PRODUCTIONPROPORTION = cell(NoCases,7);
SYSTEMSETUPMATRIX = cell(NoCases,7);
LCHMATRIX = cell(NoCases,7);
TARGETTEMPMATRIX = cell(NoCases,7);

COHMATRIX(:,1) = num2cell(Place_GeoID);
MAXPOWERMATRIX(:,1) = num2cell(Place_GeoID);
CAPACITYFACTORMATRIX(:,1) = num2cell(Place_GeoID);
TOTALNUMBERPLANTSMATRIX(:,1) = num2cell(Place_GeoID);
DRILLINGCOSTMATRIX(:,1) = num2cell(Place_GeoID);
DISTRICTHEATINGCOSTMATRIX(:,1) = num2cell(Place_GeoID);
NETANNUALHEATMATRIX(:,1) = num2cell(Place_GeoID);
PRODUCTIONPROPORTION(:,1) = num2cell(Place_GeoID);
SYSTEMSETUPMATRIX(:,1) = num2cell(Place_GeoID);
LCHMATRIX(:,1) = num2cell(Place_GeoID);
TARGETTEMPMATRIX(:,1) = num2cell(Place_GeoID);

ProdTemp = ptvect;  %[75 85 95 105 0 0];          %Will accept six at a time
```

```
try

for n=nvect;  %1:4  %MUST ALWAYS START AT 1!  IF YOU WANT DIFFERENT TEMPS THEN CHANGE THE ProdTemp VECTOR ABOVE!

    ProductionTemperature = ProdTemp(n);                        %Primary supply temperature (Tps, Tpi) [degrees C]
    %InjectionTemperature = ProductionTemperature - GFDeltaT;    %Primary return temperature (Tpr, Tpo) [degrees C]

    message = ['Calculating for Tprod = ' num2str(ProductionTemperature)];
    wb = waitbar(0,message);

for k=1:NoCases


    waitbar(k/NoCases,wb);
    Gradienti = GradientVector(k)*gradmult;
    Tave = TaveAnnual(k);
    Tmin = TminJan(k);
    TmeanJan = TaveJan(k);
    Tabsmin = TminAbs(k);
    sfEdu = vectorEdu(k);
    sfFsvc = vectorAFS(k)*0.1375;
    sfHS = vectorHCSA(k);
    sfLgn = vectorAFS(k)*0.8625;
    sfRet = vectorRet(k) + vectorWhsl(k);
    sfOff = vectorInf(k) + vectorRERL(k) + vectorPST(k) + vectorASW(k);
    sfPas = vectorAER(k);
    sfRes = vectorRes(k);
    sfSvc = vectorOth(k);
    length = L_road(k);
    elprice = P_elec(k);
    res_bldgs = ResBldgVector(k);
    res_units = ResUnitVector(k);
    com_bldgs = ComBldgVector(k);
    com_units = ComUnitVector(k);
    detached = DetachedVector(k);
    attached = AttachedVector(k);
    bldg2_4 = Vector2_4(k);
    bldg5_19 = Vector5_19(k);
    bldg20_49 = Vector20_49(k);
    bldg50_plus = Vector50_plus(k);
    SqFtUnit = SqFtUnitVector(k);

    Tps = ProductionTemperature;         %Temperature at inlet district heating system is assumed same as production well temperature [C]


    %% Set linear learning curves for costs, lifetime, efficiencies, etc. Assume will deploy 1 system per year for first 5 years and 2 systems per year for years 6-20

%     if k<=5
%         drillmult = (102.5-2.5*k)/100;          %Drilling cost multiplier
%         stimmult = (102.5-2.5*k)/100;           %Stimulation cost multiplier
```

```
%           surfmult = (101.25-1.25*k)/100;            %Surface cost multiplier
%           opmult = (101.25-1.25*k)/100;              %Surface plant O&M cost multiplier
%           pumpeff = (78.75+1.25*k)/100;            %Pump effiency
%           boilereff = (83.75+1.25*k)/100;          %Boiler efficiency
%           LifetimePlant = 30;                      %Lifetime technology curve
%           payback = LifetimePlant;
%           Tss = 72.25-2.5*k;                     %Secondray supply temp curve
%           Tsr = 41.25-1.25*k;                    %Secondray return temp curve
%           Tpinch = 3.125-0.125*k;              %Pinch temp curve
%           WellFlowRate = 25.0+5*k;               %Well flow rate curve
%           U0 = 4875+125*k;                       %Design U-value curve
%           GasPrice = 7.3225+0.1875*k;                %Natural gas prie increase (industrial consumers)
%       elseif k>5 && k<=35
%           drillmult = (91.67-0.33*(2.5+k/2))/100;           %Drilling cost multiplier
%           stimmult = (91.67-0.33*(2.5+k/2))/100;            %Stimulation cost multiplier
%           surfmult = (96.67-0.33*(2.5+k/2))/100;            %Surface cost multiplier
%           opmult = (96.67-0.33*(2.5+k/2))/100;              %Surface plant O&M cost multiplier
%           pumpeff = 0.85;                                   %Pump effiency
%           boilereff = 0.90;                                 %Boiler efficiency
%           LifetimePlant = 30;                               %Lifetime technology curve
%           payback = LifetimePlant;
%           Tss = 63.33-0.67*(2.5+k/2);                %Secondray supply temp curve
%           Tsr = 36.67-0.33*(2.5+k/2);                %Secondray return temp curve
%           Tpinch = 2.833-0.066*(2.5+k/2);               %Pinch temp curve
%           WellFlowRate = 40+2*(2.5+k/2);             %Well flow rate curve
%           U0 = 5333+33*(2.5+k/2);                 %Design U-value curve
%           GasPrice = 7.51+0.15*(2.5+k/2);               %Natural gas prie increase (industrial consumers)
%       else
%           drillmult = 0.85;                 %Drilling cost multiplier
%           stimmult = 0.85;                  %stimulation cost multiplier
%           surfmult = 0.90;                  %Surface cost multiplier
%           opmult = 0.90;                    %Surface plant O&M cost multiplier
%           pumpeff = 0.85;                   %Pump effiency
%           boilereff = 0.90;                 %Boiler efficiency
%           LifetimePlant = 30;               %Lifetime technology
%           payback = LifetimePlant;
%           Tss = 50;                         %Secondray supply temp
%           Tsr = 30;                         %Secondray return temp
%           Tpinch = 1.5;                     %Pinch temp
%           WellFlowRate = 80;                %Well flow rate
%           U0 = 6000;                        %Design U-value
%           GasPrice = 10.51;                 %Natural gas prie increase (industrial consumers)
%       end




    %% 3 District Heating Demand and Costs
    % ------------------------------------------
    %If Poweroption = 2, run subroutines to calculate estimated heating demand for district heating system and to calculate pipe size and quantity
```

```
 [vrdmnd maxdmnd load dmnd PeakUnitDmnd] = DemandFcn(Tave, Tmin, Tabsmin, sfEdu, sfFsvc, sfHS, sfLgn, sfRet, sfOff, sfPas, sfSvc, sfRes, SqFtUnit, TmeanJan);

dmnd0 = dmnd;                    %True demand
maxdmnd0 = maxdmnd;
vrdmnd0 = vrdmnd;
dmnd = dmnd*dmult;               %Adjusted demand
maxdmnd = maxdmnd*dmult;
vrdmnd = vrdmnd*dmult;


 %%%%% FLOW CALCULATIONS %%%%%

     %Design parameters for HX
     Tps0 = Tps;                                               %Design primary supply temp [C]
     Tss0 = Tss;                                               %Design secondary supply temp [C]
     Tsr0 = Tsr;                                               %Design secondary return temp [C]
     Tpr0 = max([Tsr0+Tpinch Tps0-GFmaxDT]);                   %Design primary return temp [C]
     kgsp0 = WellFlowRate;                                     %Design primary mass flow [kg/s]
     kgss0 = (kgsp0*4200*(Tps0-Tpr0))/(4200*(Tss0-Tsr0));     %Design secondary mass flow [kg/s]
     Ti0 = 21;                                                 %Indoor design temperature

     Cu = U0*(1/(kgsp0^0.7)+1/(kgss0^0.7));                   %Constant for heat x-fer coefficient estimation, calculated from design conditions and optimum U-value
     maxWth = (maxdmnd*1000*1055)/(86400);                    %Max (design) community demand [Wth]
     maxWthV(1:365,1) = maxWth;                                %Max power vector (calc tool) [W]
     LMTDhx0 = ((Tps0-Tss0)-(Tpr0-Tsr0))/log((Tps0-Tss0)/(Tpr0-Tsr0));    %Design heat exchanger LMTD [C]
     LMTDr0 = (Tss0-Tsr0)/log((Tss0-Ti0)/(Tsr0-Ti0));         %Design radiator LMTD [C]
     dmndWthV = (dmnd'*1000*1055)/86400;                       %Demand vector (average power each day of year) [W]
     DesignWth = max(dmndWthV);                                %Design condition power (if sized for average peak) [W]
     DesignWthV(1:365,1) = DesignWth;                          %Design power vector (calc tool)
     %HXArea = maxWth/(U0*LMTDhx0);                           %Req'd heat exchnager size (if sized for extreme peak) [m2]
     HXArea = DesignWth/(U0*LMTDhx0);                          %Req'd heat exchanger size (if sized for average peak) [m2]

     %LMTDrV = ((dmndWthV./maxWthV).^1.3)*LMTDr0;             %Daily radiator LMTD vector at non-design loads (if designed for extreme peak)
     LMTDrV = ((dmndWthV./DesignWthV).^1.3)*LMTDr0;           %Daily radiator LMTD vector at non-design loads (if designed for average peak)
```

```
        Tss0V(1:365,1) = Tss0;                                  %Daily secondary supply temp vector
        TsrV = zeros(365,1);                                    %Setup secondary return temp vector
        kgssV = zeros(365,1);                                   %Setup secondary mass flow vector
        Ti0V(1:365,1) = Ti0;                                    %Vectorize indoor temp
        Uvect = zeros(365,1);                                   %Setup U-vector (may be unused?)
        kgspV = zeros(365,1);                                   %Setup primary mass flow vector
        TprV = zeros(365,1);                                    %Setup primary return temp vector
        Tps0V(1:365,1) = Tps0;                                  %Vectorize primary supply temp

        TsrV = max((Ti0V-LMTDrV.*lambertw(-((Tss0-Ti0).*exp((Ti0V./LMTDrV)-(Tss0V./
        LMTDrV)))./LMTDrV)),Ti0+Tpinch);   %Secondary return temp vector
        kgssV = dmndWthV./(4200*(Tss0V-TsrV));                  %Daily secondary mass flow vector

        x0(1:365,1) = TsrV+Tpinch;                              %Initial guess vector

        TprvFunction = @(x) dmndWthV.*((kgssV.*(Tss0V-TsrV)./(Tps0V-x)).^-0.7+kgssV.^-
        0.7).*log(((Tps0V-Tss0V)./(x-TsrV))) - (Tps0V-Tss0V-x+TsrV)*Cu*HXArea;

        options = optimset('Display','off');
        TprV = real(fsolve(TprvFunction,x0,options));           %Solve for daily average primary return temp
        indices1 = find(TprV<x0);                               %Primary return temp cannot be lower than secondary return plus pinch temp
        indices2 = find(TprV>TsrV+25);
        TprV(indices1) = x0(indices1);
        TprV(indices2) = x0(indices2);
        TprV(TprV<(Tps0-GFmaxDT)) = (Tps0-GFmaxDT);             %Assume primary fluid temperature drop cannot exceed certain value (GFmaxDT)
        kgspV = dmndWthV./(4200*(Tps0V-TprV));                  %Calculate daily mass flow in network

        DailyPower = kgspV.*(Tps0V-TprV)*4200;                  %Thermal power delivered each day [W]
        DailyMWh = DailyPower.*24/1000000;                      %MWh per day req'd
        AveragePower = sum(DailyPower)/365;                     %Average power produced over year
        Averagekgsp = sum(kgspV)/365;                           %Average mass flow req'd over year
        AverageTpr = Tps - AveragePower/(Averagekgsp*4200);     %Average primary return temp over year
        DesignInjecTemp0 = Tpr0;                                %Injection temp at design conditions
        kgs = kgspV;


    %Transforming to MW and MWh for cost function
    %Qtot is yearly average heating demand in MWh
```

```
%Qmax is maximum heating demand in MW
Qtot = yrdmnd*2.931*10^-4;
Qmax = maxdmnd*1.221*10^-5;


%InvestmentCost is capital cost for district heating system
%OperatingCost is yearly O&M costs for district heating system

c = clock;
disp(['--- Date: ',date,' - Time: ',num2str(c(4)),':',num2str(c(5)),':',num2str(round(c(6))),' ---']);


%% 4 GEOPHIRES model
% -------------
%Prepare GEOPHIreS parameters
CapacityFactor = 0.5;           %Assume initially EGS capacity factor of 0.5
MaxPower = 10;                  %Assume initially 10MWth EGS plant
InvestmentCostGEOPHIRES = 1e6;     %Initial guess for surface plant capital cost [$]
OperatingCostGEOPHIRES = 0.5e6;    %Initial guess for surface plant O&M cost [M$/yr]
Depth = 5;                      %Initial drilling depth [km]. Will be adjusted in order to get the chosen production temperature [C]
DesignInjecTemp = DesignInjecTemp0;

%Run GEOPHIRES model

COHVector = zeros(0,1);
MaxPowerVector = zeros(0,1);
CapacityVector = zeros(0,1);
DailyCapacityFactorMatrix = zeros(365,0);
HeatMatrix = zeros(365,0);
DrillingCostVector = zeros(0,1);
DistrictHeatingCostVector = zeros(0,1);
NetAnnualHeat = zeros(0,1);
ProductionProportion = zeros(0,1);
SystemSetupVector = zeros(0,1);
TotalNumberPlants = 0;
LCHVector = zeros(0,1);
ExcessMWVector = zeros(0,1);
TotalOMVector = zeros(0,1);
SurfOMVector = zeros(0,1);

%dmnd = dmnd0;

    counter = 0;
    converged = false;
    while ~converged
        makeInputFile;
        system('Console1.exe');
        [GEOPHIRES_RESULTS] = textread('MATLABSUM.out','%s');
        MaxPower = str2double(cell2mat(GEOPHIRES_RESULTS(2)));
        COH = str2double(cell2mat(GEOPHIRES_RESULTS(4)));
        Tgeo1 = str2double(cell2mat(GEOPHIRES_RESULTS(6)));
        TgeoEnd = str2double(cell2mat(GEOPHIRES_RESULTS(8)));
        disp([' Depth =                        km    ',num2str(Depth),])
```

```
            disp([' TgeoEnd =                    C    ',num2str(TgeoEnd),])
            disp([' Capacity Factor =                     ',num2str(CapacityFactor)])


            CapacityFactorOld = CapacityFactor;

            Proportion1plant = min((MaxPower*24/max(DailyMWh)),1);
            dmnd1plant = Proportion1plant*(DailyMWh);

            excesspeakMW = Proportion1plant*(maxWth/1000000) - MaxPower; %Peak power left unmet (per plant service area)
            excesspeakMWh = Proportion1plant*((maxWth*24/1000000) - max(DailyMWh)); %MWh left unmet (per plant service area)


            DailyCapacityFactorVector = min(dmnd1plant,ones(365,1)*24*MaxPower)/(MaxPower*24);
            CapacityFactor = mean(DailyCapacityFactorVector);

            %Account for temperature losses based on total piping distance (0.25C/km - Ryan 1981) (should subtract from Tps but adding to Tpr will have same effect...)
            DesignInjecTemp = DesignInjecTemp0 + 0.25*Proportion1plant*(length/1000)*RoadCoverage;

            InvestmentcostGEOPHIRESOld = InvestmentCostGEOPHIRES;

            [InvestmentCostGEOPHIRES,OperatingCostGEOPHIRES,PipeDiam,NoPipes,Cdist,PumpIC,BldgCost,SystemSetup,ShaftP,Energy,pumpingcost,PC,LCOheat,LCOheatnominator,LCOheatdenominator,PeakFuelCost,PeakBoilerCost,TotBldgCost1,TotBldgCost2,BldgCost1,BldgCost2] = distcostFcn(Proportion1plant,Proportion1plant*length,Proportion1plant*Qtot,Proportion1plant*Qmax,Proportion1plant*kgs,Tps,elprice,discount,payback,BranchDistance,res units,com bldgs,com units,detached,attached,bldg2 4,bldg5 19,bldg20 49,bldg50 plus,PeakUnitDmnd,RoadCoverage,Tsr0,Tss0,HXArea,U0,Tpr0,networkservice,GasPrice,excesspeakMW,boilereff,pumpeff);
            %InvestmentCostGEOPHIRES is total investment cost of all surface equipment (M$)
            %OperatingCostGEOPHIRES is yearly operating cost for surface equipment (M$/yr)

            counter = counter + 1;

            if counter > 50
                SystemSetup = {'COUNTER ERROR'};
                converged = true;
            elseif abs(Tgeo1-TgeoEnd) > 5
                WellSeparation = WellSeparation*1.2;
                converged = false;
            elseif abs(TgeoEnd-ProductionTemperature) > 0.5
                Depth = Depth + (ProductionTemperature-TgeoEnd)/Gradient1;
                converged = false;
            elseif abs(CapacityFactor - CapacityFactorOld) > 0.01
                converged = false;
            elseif abs(InvestmentCostGEOPHIRES - InvestmentcostGEOPHIRESOld) > 100000
```

```
                converged = false;
            else
                converged = true;
            end



        end


        %Simple discounted cash-flow analysis for estimation of Levelized Cost of Heat (LCOH)

        DrillCost = str2double(cell2mat(GEOPHIRES_RESULTS(10)));
        TotalCap = str2double(cell2mat(GEOPHIRES_RESULTS(20)));
        TotalOp = str2double(cell2mat(GEOPHIRES_RESULTS(30)));            %add or subtract 0.001 or 0.002 for $10 or $20 carbon tax since last digit is dropped during print-step

        LCOHnominator = zeros(payback+4,1);
        LCOHnominator(1,1) = ((DrillCost/2)/(1+discount));
        LCOHnominator(2,1) = (((DrillCost/2)+(TotalCap-DrillCost)/6)/(1+discount)^2);
        LCOHnominator(3,1) = (((TotalCap-DrillCost)/3)/(1+discount)^3);
        LCOHnominator(4,1) = (((TotalCap-DrillCost)/2)/(1+discount)^4);
        LCOHdenominator = zeros(payback+4,1);
        for w=5:payback+4
            LCOHnominator(w,1) = TotalOp/((1+discount)^w);
            LCOHdenominator(w,1) = (Proportion1plant*Qtot)/((1+discount)^w);
        end
        LCOH0 = sum(LCOHnominator)/sum(LCOHdenominator);
        LCH = LCOH0*1000000/3.413;            %Convert M$/MWh to $/MMBTU


        %Store Data

        COHVector = [COHVector COH];
        MaxPowerVector = [MaxPowerVector MaxPower];
        CapacityVector = [CapacityVector CapacityFactor];
        DailyCapacityFactorMatrix = [DailyCapacityFactorMatrix DailyCapacityFactorVector];
        TotalNumberPlants = floor(1/Proportion1plant);
        DrillingCostVector = [DrillingCostVector str2double(cell2mat(GEOPHIRES_RESULTS(10)))];
        DistrictHeatingCostVector = [DistrictHeatingCostVector str2double(cell2mat(GEOPHIRES_RESULTS(14)))];
        HeatMatrix = [HeatMatrix DailyCapacityFactorVector.*ones(365,1)*24*MaxPower];
        NetAnnualHeat = [NetAnnualHeat (MaxPower*CapacityFactor*8760)];
        ProductionProportion = [ProductionProportion (MaxPower*CapacityFactor*8760)/Qtot];
        SystemSetupVector = [SystemSetupVector SystemSetup];
        LCHVector = [LCHVector LCH];
        ExcessMWVector = [ExcessMWVector excesspeakMW];
        TotalOMVector = [TotalOMVector TotalOp];
        SurfOMVector = [SurfOMVector OperatingCostGEOPHIRES];
```

```
        disp(['GEOPHIRES COST OF HEAT OF PLANT ', num2str(TotalNumberPlants),' IS ', num2str(COH)]);
        disp(['The total number of plants is ',num2str(TotalNumberPlants)]);




    %% 5 Postprocessing
    % -----------------


COHMATRIX(k,n+1) =  num2cell(COHVector);
MAXPOWERMATRIX(k,n+1) = num2cell(MaxPowerVector);
CAPACITYFACTORMATRIX(k,n+1) = num2cell(CapacityVector);
TOTALNUMBERPLANTSMATRIX(k,n+1) = num2cell(TotalNumberPlants);
DRILLINGCOSTMATRIX(k,n+1) = num2cell(DrillingCostVector);
DISTRICTHEATINGCOSTMATRIX(k,n+1) = num2cell(DistrictHeatingCostVector);
NETANNUALHEATMATRIX(k,n+1) = num2cell(NetAnnualHeat);
PRODUCTIONPROPORTION(k,n+1) = num2cell(ProductionProportion);
SYSTEMSETUPMATRIX(k,n+1) = (SystemSetupVector);
LCHMATRIX(k,n+1) = num2cell(LCHVector);
EXCESSMWMATRIX(k,n+1) = num2cell(ExcessMWVector);
TARGETTEMPMATRIX(k,n+1) = num2cell(ProductionTemperature);
TOTALOMMATRIX(k,n+1) = num2cell(TotalOMVector);
SURFOMMATRIX(k,n+1) = (SurfOMVector);

%Optimal matrix for COH from MITEGS

if COHVector<cell2mat(COHMATRIX(k,n))
    BESTMATRIXCOH(k,1) = COHMATRIX(k,1);
    BESTMATRIXCOH(k,2) = COHMATRIX(k,n+1);
    BESTMATRIXCOH(k,3) = MAXPOWERMATRIX(k,n+1);
    BESTMATRIXCOH(k,4) = CAPACITYFACTORMATRIX(k,n+1);
    BESTMATRIXCOH(k,5) = TOTALNUMBERPLANTSMATRIX(k,n+1);
    BESTMATRIXCOH(k,6) = TARGETTEMPMATRIX(k,n+1);

end

%Optimal matrix for LCH calcualted using discounted cash-flow

if LCHVector<cell2mat(LCHMATRIX(k,n))
    BESTMATRIXLCH(k,1) = LCHMATRIX(k,1);
    BESTMATRIXLCH(k,2) = LCHMATRIX(k,n+1);
    BESTMATRIXLCH(k,3) = MAXPOWERMATRIX(k,n+1);
    BESTMATRIXLCH(k,4) = CAPACITYFACTORMATRIX(k,n+1);
    BESTMATRIXLCH(k,5) = TOTALNUMBERPLANTSMATRIX(k,n+1);
    BESTMATRIXLCH(k,6) = TARGETTEMPMATRIX(k,n+1);

end


end
```

```
%Write results to output spreadsheet

    Titles = {'GeoID' 'LCH($/MMBTU)Calc' 'COH($/MMBTU)MITEGS' 'MaxPower(MW)' 'CapacityFactor' 'NumberPlants' 'DrillCost(M$)' 'NetworkCost(M$)' 'ProdProportion' 'NetAnnualHeat(MWh)' 'UnmetPeakMW' 'SystemSetup' 'TotalOM' 'LCHPlotting:' ' ' ' ' ' ' ' ' 'COHPlotting' ' ' ' ' ' ' ' ' 'SurfOM'};

    xlswrite(outname,Titles,['Tprod ' num2str(ProductionTemperature)],'A1:S1');

    xlswrite(outname,COHMATRIX(1:end,1),['Tprod ' num2str(ProductionTemperature)],'A2');
    xlswrite(outname,COHMATRIX(1:end,n+1),['Tprod ' num2str(ProductionTemperature)],'C2');
    xlswrite(outname,MAXPOWERMATRIX(1:end,n+1),['Tprod ' num2str(ProductionTemperature)],'D2');
    xlswrite(outname,CAPACITYFACTORMATRIX(1:end,n+1),['Tprod ' num2str(ProductionTemperature)],'E2');
    xlswrite(outname,TOTALNUMBERPLANTSMATRIX(1:end,n+1),['Tprod ' num2str(ProductionTemperature)],'F2');
    xlswrite(outname,DRILLINGCOSTMATRIX(1:end,n+1),['Tprod ' num2str(ProductionTemperature)],'G2');
    xlswrite(outname,DISTRICTHEATINGCOSTMATRIX(1:end,n+1),['Tprod ' num2str(ProductionTemperature)],'H2');
    xlswrite(outname,PRODUCTIONPROPORTION(1:end,n+1),['Tprod ' num2str(ProductionTemperature)],'I2');
    xlswrite(outname,NETANNUALHEATMATRIX(1:end,n+1),['Tprod ' num2str(ProductionTemperature)],'J2');
    xlswrite(outname,SYSTEMSETUPMATRIX(1:end,n+1),['Tprod ' num2str(ProductionTemperature)],'L2');
    xlswrite(outname,LCHMATRIX(1:end,n+1),['Tprod ' num2str(ProductionTemperature)],'B2');
    xlswrite(outname,EXCESSMWMATRIX(1:end,n+1),['Tprod ' num2str(ProductionTemperature)],'K2');
    xlswrite(outname,TOTALOMMATRIX(1:end,n+1),['Tprod ' num2str(ProductionTemperature)],'M2');
    xlswrite(outname,SURFOMMATRIX(1:end,n+1),['Tprod ' num2str(ProductionTemperature)],'X2');


%Plot COH results as supply curve

    CumCapac = cell2mat(MAXPOWERMATRIX(:,n+1)).*cell2mat(TOTALNUMBERPLANTSMATRIX(:,n+1));

    LCECapac0 = real([cell2mat(COHMATRIX(:,n+1)) CumCapac]);

    LCECapac1 = sortrows(LCECapac0,1);

    LCECapac2 = [LCECapac1(:,1) cumsum(LCECapac1(:,2))];

    [rows cols] = size(LCECapac2);

    LCECapac3 = zeros(rows+1,2);
    LCECapac3(1:rows,1) = LCECapac2(:,1);
    LCECapac3(rows+1,1) = LCECapac2(rows,1);
    for i=1:(rows);
```

```
        LCECapac3(i+1,2) = LCECapac2(i,2);
        LCECapac3(i,3) = LCECapac3(i+1,2)-LCECapac3(i,2);
        LCECapac3(i+1,4) = LCECapac3(i+1,1)-LCECapac3(i,1);
    end

    LCECapac3(1,2) = 0;
    LCECapac3(rows+1,3) = 0;
    LCECapac3(1,4) = 0;


    xlswrite(outname,{'COH' 'CumCapac' 'x-step' 'y-step'},['Tprod ' num2str(
    ProductionTemperature)],'S2:V2');
    xlswrite(outname,LCECapac3,['Tprod ' num2str(ProductionTemperature)],'S3');


   %Plot LCH results as supply curve

    CumCapac = cell2mat(MAXPOWERMATRIX(:,n+1)).*cell2mat(TOTALNUMBERPLANTSMATRIX(:,n+1));

    LCECapac0 = real([cell2mat(LCHMATRIX(:,n+1)) CumCapac]);

    LCECapac1 = sortrows(LCECapac0,1);

    LCECapac2 = [LCECapac1(:,1) cumsum(LCECapac1(:,2))];

    [rows cols] = size(LCECapac2);

    LCECapac3 = zeros(rows+1,2);
    LCECapac3(1:rows,1) = LCECapac2(:,1);
    LCECapac3(rows+1,1) = LCECapac2(rows,1);
    for i=1:(rows);
        LCECapac3(i+1,2) = LCECapac2(i,2);
        LCECapac3(i,3) = LCECapac3(i+1,2)-LCECapac3(i,2);
        LCECapac3(i+1,4) = LCECapac3(i+1,1)-LCECapac3(i,1);
    end

    LCECapac3(1,2) = 0;
    LCECapac3(rows+1,3) = 0;
    LCECapac3(1,4) = 0;


    xlswrite(outname,{'LCH' 'CumCapac' 'x-step' 'y-step'},['Tprod ' num2str(
    ProductionTemperature)],'N2:Q2');
    xlswrite(outname,LCECapac3,['Tprod ' num2str(ProductionTemperature)],'N3');

end


%Prepare supply curve for best matrix for cash-flow LCH

    CumCapac = cell2mat(BESTMATRIXLCH(:,3)).*cell2mat(BESTMATRIXLCH(:,5));

    LCECapac0 = real([cell2mat(BESTMATRIXLCH(:,2)) CumCapac]);

    LCECapac1 = sortrows(LCECapac0,1);
```

```
    LCECapac2 = [LCECapac1(:,1) cumsum(LCECapac1(:,2))];

    [rows cols] = size(LCECapac2);

    LCECapac3 = zeros(rows+1,2);
    LCECapac3(1:rows,1) = LCECapac2(:,1);
    LCECapac3(rows+1,1) = LCECapac2(rows,1);
    for i=1:(rows);
        LCECapac3(i+1,2) = LCECapac2(i,2);
        LCECapac3(i,3) = LCECapac3(i+1,2)-LCECapac3(i,2);
        LCECapac3(i+1,4) = LCECapac3(i+1,1)-LCECapac3(i,1);
    end

    LCECapac3(1,2) = 0;
    LCECapac3(rows+1,3) = 0;
    LCECapac3(1,4) = 0;

    OptimalTitles = {'LCH calc using discounted cash-flow' ' ' ' ' ' ' ' ' ' '; 'GeoID'
    'LCH($/MMBTU)' 'MaxPower(MW)' 'CapacityFactor' 'NumberPlants' 'OptimalTemp'};

    xlswrite(outname,OptimalTitles,'OptimalTemp','A1:F2');
    xlswrite(outname,BESTMATRIXLCH,'OptimalTemp','A3');
    xlswrite(outname,{'LCH' 'CumCapac' 'x-step' 'y-step'},'OptimalTemp','H2:K2');
    xlswrite(outname,LCECapac3,'OptimalTemp','H3');


%Prepare supply curve for best matrix for GEOPHIRES COH

    CumCapac = cell2mat(BESTMATRIXCOH(:,3)).*cell2mat(BESTMATRIXCOH(:,5));

    LCECapac0 = real([cell2mat(BESTMATRIXCOH(:,2)) CumCapac]);

    LCECapac1 = sortrows(LCECapac0,1);

    LCECapac2 = [LCECapac1(:,1) cumsum(LCECapac1(:,2))];

    [rows cols] = size(LCECapac2);

    LCECapac3 = zeros(rows+1,2);
    LCECapac3(1:rows,1) = LCECapac2(:,1);
    LCECapac3(rows+1,1) = LCECapac2(rows,1);
    for i=1:(rows);
        LCECapac3(i+1,2) = LCECapac2(i,2);
        LCECapac3(i,3) = LCECapac3(i+1,2)-LCECapac3(i,2);
        LCECapac3(i+1,4) = LCECapac3(i+1,1)-LCECapac3(i,1);
    end

    LCECapac3(1,2) = 0;
    LCECapac3(rows+1,3) = 0;
    LCECapac3(1,4) = 0;

    OptimalTitles = {'GeoID' 'COH($/MMBTU)' 'MaxPower(MW)' 'CapacityFactor'
    'NumberPlants' 'OptimalTemp'};
```

```
    xlswrite(outname,OptimalTitles,'OptimalTemp','R2:W2');
    xlswrite(outname,BESTMATRIXCOH,'OptimalTemp','R3');
    xlswrite(outname,{'COH calc from MITEGS using fixed charge rate method' ' ' ' ' ' ';
     'COH' 'CumCapac' 'x-step' 'y-step'},'OptimalTemp','M1:P2');
    xlswrite(outname,LCECapac3,'OptimalTemp','M3');


 %Print parameters

    ParameterMatrix(1,:) = {'Date', datestr(floor(now)), datestr(rem(now,1))};
    ParameterMatrix(2,:) = {'LifetimePlant' num2str(LifetimePlant) 'yrs'};
    ParameterMatrix(3,:) = {'WellSeparation', num2str(WellSeparation), 'm'};
    ParameterMatrix(4,:) = {'MassFlowRate', num2str(WellFlowRate), 'kgs'};
    ParameterMatrix(5,:) = {'FixedAnnualCharge', num2str(FACR), ' '};
    ParameterMatrix(6,:) = {'BranchDistance', num2str(BranchDistance), 'm'};
    ParameterMatrix(7,:) = {'RoadCoverage', num2str(RoadCoverage), 'percent'};
    ParameterMatrix(8,:) = {'NetworkService', num2str(networkservice), '$/meter'};
    ParameterMatrix(9,:) = {'DiscountRate', num2str(discount), ' '};
    ParameterMatrix(10,:) = {'RadiatorSupply', num2str(Tss0), 'degreesC(design)'};
    ParameterMatrix(11,:) = {'RadiatorReturn', num2str(Tsr0), 'degreesC(design)'};
    ParameterMatrix(12,:) = {'HXPinchTemp', num2str(Tpinch), 'degreesC'};
    ParameterMatrix(13,:) = {'MaxDeltaT', num2str(GFmaxDT), 'degreesC'};
    ParameterMatrix(14,:) = {'DmndMult', num2str(dmult) '(portion)'};

    xlswrite(outname,ParameterMatrix,'Parameters');


    send txt message('Simulation Complete')

toc


catch err

    send txt message('Error')

end

end
```

Appendix C: DemandFcn Subroutine

The following 102 lines of MATLAB code comprise the subroutine used to generate the annual temperature and heating demand profiles at each "place" in the dataset. It is called on line 259 of the main MATLAB shell program.

```
%Demand calculation function
%
%Inputs are: Average temperature, Minimum daily average temperature,
%Minimum daily low temperature, and then building square feet:
%sfEdu Education square feet, sfFsls Food sales square feet, sfFsvc Food service square feet, sfHS Healthcare square feet, sfLgn Lodging square feet, sfRet Retail square feet, sfOff Office square feet, sfPas Public Assembly square feet, sfPOS Public order and safety (police & prisons) square feet, sfRel Religious Worship square feet, sfSvc Service (?) square feet, sfRes Residential square feet
%
%Outputs an array where the first element is yearly demand, the second the
%maximum demand the third the load factor, and the fourth the simulated
%demand of the system
%
%Units are:
%1. Temperature in C
%2. Scaling Factors 1000btu/sqft
%3. Area in sq. ft.
%4. Demand outputs in 1000btu/yr

function [yrdmnd maxdmnd load dmnd PeakUnitDmnd]=DemandFcn(Tave, TminJan, Tabsmin, sfEdu, sfFsvc, sfHS, sfLgn, sfRet, sfOff, sfPas, sfSvc, sfRes, SqFtUnit, TmeanJan)

% Optional temperature amplitude adjustment (sensitivity analysis)
% TminJan = Tave - (Tave-TminJan)*0.75;
% TmeanJan = Tave - (Tave-TmeanJan)*0.75;
% Tabsmin = Tave - (Tave-Tabsmin)*0.75;

%Scalingfactors SH
scCornell=94.6;     %Cornell average [1000 BTU/yr/sqft]
scUS=34;            %US average
scMA=47;            %Middle Atlantic average

scEdu=39.4;
scFsls=28.9;
scFsvc=43.1;
scHS=70.4;
scLgn=22.2;
scRet=24.8;
scOff=32.8;
scPas=49.7;
scPOS=49.9;
scRel=26.2;
scSvc=35.9;
scRes=25.7; %2001RECS space heating

%WH per sqft:
scWCornell=10.5; %for reference
scWEdu=5.8;
scWFsls=2.9;
scWFsvc=40.4;
scWHS=30.2;
scWLgn=31.4;
scWRet=1.1;
scWOff=2.0;
```

```
scWPas=1.0;
scWPOS=14.0;
scWRel=0.8;
scWSvc=1.0;
scWRes=8.0; %2001 RECS

%Temperature Estimation
temp=zeros(365,1);

dmndSH=temp;
dmnd=temp; % initialize the array
totalsqft=sfEdu+sfFsvc+sfHS+sfLgn+sfRet+sfOff+sfPas+sfSvc+sfRes;

i=1:365;

temp=Tave+(Tave-TmeanJan)*sin(2*pi()*(i-112)./365);

%Assume a 5-day cold spell Jan 18-22 based on average January mimumums
temp(18:22) = TminJan;

% Optional temperature shift (sensitivity analysis)
% temp=temp-3;

%ScalingFactors
% 1. SH
sclSH=(sfEdu*scEdu+sfFsvc*scFsvc+sfHS*scHS+sfLgn*scLgn+sfRet*scRet+sfOff*scOff+sfPas*
scPas+sfSvc*scSvc+sfRes*scRes)*(scMA/scUS)/(scCornell*(totalsqft));

% 1. WH (constant through the year)
sclWH=(sfEdu*scWEdu+sfFsvc*scWFsvc+sfHS*scWHS+sfLgn*scWLgn+sfRet*scWRet+sfOff*scWOff+
sfPas*scWPas+sfSvc*scWSvc+sfRes*scWRes)/((totalsqft));


%Demand Estimation (SH) still per sqft
dmndSH = (-7.73*temp+162.4)*sclSH;  %1000 BTU/sqft/year (calculated for each day)
dmndSH(dmndSH<0)=0;


%Estimate SH+WH
dmnd=(dmndSH+sclWH).*totalsqft/365; %total demand in 1000btu/day
%Outputs
%1. Load Factor
load=mean(dmnd)/max(dmnd);

%2. Max instant dmnd:
maxdmnd=((-7.73*Tabsmin+162.4)*(sclSH) + sclWH)*totalsqft/365; %1000BTU/day

%4. Average yearly demand:
yrdmnd=sum(dmnd);

%5. Average max demand per housing unit (BTU/hr)
PeakUnitDmnd = ((-7.73*Tabsmin+162.4)*(scRes*((scMA/scUS)/scCornell)) + sclWH)*(SqFtUnit
/8765)*1000;

end
```

Appendix D: MakeInputFile Subroutine

The following 58 lines of MATLAB code comprise the subroutine used to generate the input file responsible for passing all variables from the MATLAB shell to GEOPHIRES. It is called on line 374 of the main MATLAB shell program, right before GEOPHIRES is executed on line 375.

```
fileID = fopen('filein.txt','w');
fprintf(fileID,'ICASE, %1.0f \r\n',2);
fprintf(fileID,'methd, %1.0f \r\n',0);
fprintf(fileID,'drawdp, %1.4f \r\n',0.0001);
fprintf(fileID,'IMODE, %1.0f \r\n',1);
fprintf(fileID,'LEVEL, %1.0f \r\n',1);
fprintf(fileID,'DEPTH, %1.3f \r\n',Depth);
fprintf(fileID,'GRT, %2.1f ,DEPTH, %1.1f \r\n',Gradienti,10);
fprintf(fileID,'GRT, %2.1f ,DEPTH, %1.1f \r\n',0,0);
fprintf(fileID,'GRT, %2.1f ,DEPTH, %1.1f \r\n',0,0);
fprintf(fileID,'GRT, %2.1f ,DEPTH, %1.1f \r\n',0,0);
fprintf(fileID,'MAXTEMP, %3.1f \r\n',330);
fprintf(fileID,'WELLRATIO, %1.0f \r\n',1);
fprintf(fileID,'RESOPTION, %1.0f \r\n',0);
fprintf(fileID,'FRACTOPT, %1.0f \r\n',2);
fprintf(fileID,'FRACTAREA, %1.0f \r\n',0);
fprintf(fileID,'FHEIGHT, %3.1f \r\n',WellSeparation);
fprintf(fileID,'FWIDTH, %1.0f \r\n',0);
fprintf(fileID,'DEVIATION, %1.1f \r\n',0);
fprintf(fileID,'VOLUMEOPT, %1.0f \r\n',1);
fprintf(fileID,'FRACTNUMB, %2.0f \r\n',25);
fprintf(fileID,'FRACTSEP, %1.1f \r\n',60);
fprintf(fileID,'RESVOLUME, %1.0f \r\n',0);
fprintf(fileID,'FRACTDIST, %1.0f \r\n',1);
fprintf(fileID,'FRACTFLOW, %1.0f, %1.2f, %1.3f, %1.3f, %1.1f \r\n',1 , 0.05 , 0.125 , 0.325 , 0.5);
fprintf(fileID,'FRAREA, %1.0f, %1.2f, %1.2f, %1.2f, %1.2f \r\n',1 , 0.25 , 0.25 , 0.25 , 0.25);
fprintf(fileID,'INJTEMP, %2.1f \r\n',DesignInjecTemp);
fprintf(fileID,'WATERLOSS, %1.2f \r\n',0.02);
fprintf(fileID,'FPUMP, %1.2f \r\n',0.8);
fprintf(fileID,'TEMPDROP, %2.0f \r\n',15);
fprintf(fileID,'FLOW, %2.1f \r\n',WellFlowRate);
fprintf(fileID,'IMPEDANCE, %1.2f \r\n',1.57);
fprintf(fileID,'INJDIAM, %1.1f \r\n',7);
fprintf(fileID,'PRODDIAM, %1.1f \r\n',7);
fprintf(fileID,'FCAP, %1.4f \r\n',CapacityFactor);
fprintf(fileID,'FAFDC, %1.2f \r\n',0.09);
fprintf(fileID,'LIFETIME, %2.0f \r\n',LifetimePlant);
fprintf(fileID,'FCR, %1.2f \r\n',FACR);
fprintf(fileID,'LLC, %1.1f, %1.2f, %1.2f, %1.2f, %1.2f, %1.0f, %1.1f, %1.2f \r\n',0.5 , 0.11 , 0.15 , 0.04 , 0.36, 0, 0.1, 0.02);
fprintf(fileID,'VCCAPW, %1.0f , FCCAPW, %1.2f \r\n',0,drillmult);   %Drilling Cost (M$)
fprintf(fileID,'VCCAPS, %1.0f , FCCAPS, %1.2f \r\n',1,stimmult);   %Stimulation Cost (M$)
fprintf(fileID,'VCCAPP, %2.1f , FCCAPP, %1.2f \r\n',(InvestmentCostGEOPHIRES/10^6)*surfmult,1); %Surface Plant Cost (M$)
fprintf(fileID,'VCCAPD, %1.0f , FCCAPD, %1.2f \r\n',0,opmult);   %Distribution Cost (M$)
fprintf(fileID,'VCCAPE, %1.0f , FCCAPE, %1.2f \r\n',0,0);   %Exploration Cost (M$) (Is set at 0!)
fprintf(fileID,'VCOAME, %1.0f , FCOAME, %1.2f \r\n',0,opmult);   %Wellfield Maintenenace Cost (M$/yr)
fprintf(fileID,'VCOAMP, %2.1f , FCOAMP, %1.2f \r\n',OperatingCostGEOPHIRES*opmult,1); %Surface Plant Maintenance Cost  (M$/yr)
fprintf(fileID,'VCOAMA, %1.0f , FCOAMA, %1.2f \r\n',0,opmult);   %Water Cost (M$/yr)
fprintf(fileID,'TVCOAM, %1.0f \r\n',0); %Total yearly O&M Cost (M$/yr)
```

```
fprintf(fileID,'DDTH, %1.0f \r\n',0);
fprintf(fileID,'TSURF, %2.0f , TENV, %2.0f \r\n',15,25);
fprintf(fileID,'ROCKPROP, %4.1f , %4.1f, %1.1f \r\n',1050,2700,3);
fprintf(fileID,'RAMEY, %1.0f \r\n',Ramey);
fprintf(fileID,'NEWCOSTS, %1.0f \r\n',Newcosts);
fprintf(fileID,'POWEROPTION, %1.0f \r\n',Poweroption);
fprintf(fileID,'ELECPRICE, %1.3f \r\n',elprice);
fprintf(fileID,'PRINTOUTPUT, %1.0f \r\n',Printoutput);
fprintf(fileID,'OPT, %1.0f \r\n',0);
fclose(fileID);
```

Appendix E: DistCostFcn Subroutine

The following 261 lines of MATLAB code comprise the subroutine used to estimate the size and cost of distribution piping and other surface equipment. It is called on line 403 of the main MATLAB shell program.

```matlab
%Investment and O&M cost for distribution system.

function [minIC,minopannualmillions,doptimum,numberoptimum,Cdist,PumpIC,BldgCost,SystemSetup,ShaftP,Energy,pumpingcost,PC,LCOheat,LCOheatnominator,LCOheatdenominator,PeakFuelCost,PeakBoilerCost,TotBldgCost1,TotBldgCost2,BldgCost1,BldgCost2]=distcostFcn(Proportion1plant, length_road, MQgeo, Qmax, mf, Tps0, elprice,discount,payback,MassFlowRate,BranchDistance,res_bldgs,res_units,com_bldgs,com_units,detached,attached,bldg2_4,bldg5_19,bldg20_49,bldg50_plus,SqFtUnit,PeakUnitDmnd,RoadCoverage,Tsr0,Tss0,HXAreaCentral,U0,Tpr0,networkservice,GasPrice,PeakMW)

%Retrofit options:  %Option 1: assume indirect system - i.e. no central plant, ind'l bldg. HX, etc...
                    %Option 2: assume centralized system - i.e. centralized heat exchange plant, dist. water straight to bldg. radiators...
                    %Else assume no cost for heat exchangers, controls, pumps, branch lines, etc.


length = length_road*RoadCoverage;

density=943;
%4-16in diameter (2-8in radius) of pipes. Basically this allows selection relatively to
%mass flow.
r=linspace(2,8,13);


%thresshold for pipe diameter calculation

%find the minimum radius, when installing one pipe. From excel: diameter(maximum) =
%1.5197*massflow^0.427. When radius reaches 6in (diameter=12in),
%extrapolate linearly to find the according diameter.



g=9.81;
spweight=density*g;
%assume 60% efficiency for pump;
efficiency=0.6;
%Re>10^6 ..turbulent flow
fmoody=0.027;
velocity=zeros(365,13);
hf=zeros(365,13);
DP=zeros(365,13);
PP=zeros(365,13);
ShaftP=zeros(365,13);
Energy=zeros(13,1);
rinminimum=zeros(20,1);
%This model allows installation up to 10 pipes. We can add more-if reasonable.

%first find the maximum flow

    mfmax=0;
for i=1:365
    if mfmax<mf(i)
    mfmax=mf(i);
    else
```

```
    end
end
    mfmax0 = mfmax;

%If total system flow exceeds cap (ten 16" pipes) then build multiple separate networks rather than one giant network
    if  mfmax > 1670;
        mfmax = 1670;
        %mass flow will be divided amongst networks
        mf = mf*(1670/mfmax0);
        else
        mfmax = mfmax0;
        end

for i=1:10
    if mfmax>(106.4647*i)
        rinminimum(i)=0.5*(5.5726+0.062183*((1/i)*mfmax));

        else

    rinminimum(i)=0.5*(1.5197*((1/i)*mfmax)^0.427);
    end
end


pipenumber=zeros(13,1);
for k=1:13
    for i=1:365
        for h=1:10
            %find the number of pipes you should install
            %if the selected radius is above the limiting factor, then put h number of pipes.

        if r(k)>rinminimum(h)
            %install h pipes
  velocity(i,k)=mf(i)/(h*density*pi()*((r(k)*0.0254)^2));
  hf(i,k)=fmoody*(length/((r(k)*0.0254)*2))*(velocity(i,k)^2)/(2*g);
  DP(i,k)=spweight*hf(i,k);
  PP(i,k)=DP(i,k)*mf(i)/density;
  %Now find the total loss (all pipes)
  ShaftP(i,k)=h*PP(i,k)/efficiency;
  %we have daily data so the output ShaftP(W) must be multiplied by 24 to derive the daily consumption (Wh)
  Energy(k)=Energy(k)+24*ShaftP(i,k);
  %keep the number of pipes you have selected to install
  pipenumber(k)=h;

  %now stop the for-loop since you don't want to install more than needed
  break

        end
        %ok, now for very small pipe diameter, when you have very high mass flow, you should take into account that you can't install for example 2in radius..
        if r(k)<rinminimum(10)
        %report as infinite power needed
```

```
                Energy(k)=10^16;
                ShaftP(i,k)=10^16;
            end
            end
        end
end


MWH=Energy/1000000;
%total pumping cost
pumpingcost=MWH*elprice*1000;

PC=zeros(1,13);
for j=1:13

PC(j)=pumpingcost(j)/MOgeo;
end


%pumping investment cost
%assume that cost varies proportionally to power output (kW)
%for 800kW purchased cost 30,000$==>with f=3.5: 120000$. No further data for pumping cost function with capacity in Perry's, so assume linear scaling up/down

%find maximum power needed by the pump.
Shaftmax=zeros(13,1);
Shaftmax=max(ShaftP(:,1:13));

Pneeded=Shaftmax;
%calculate investment cost of pump according to its capacity. scale up/down.
PumpIC=(Pneeded/800000)*120000;

%distribution cost variations according to pipe diameter (corrected)
Cdist=zeros(13,1);
for i=1:13
  if pipenumber(i)==1
       %install one pipe
      Cdist(i)=length*(80.08*(r(i)*2) + 195.96);  %Assume supply and return line same trench
      %Cdist(i)=length*(56.17*(r(i)*2) + 176.29);  %Assume single loop (no return pipe)
      %Cdist(i)=length*(76.035*(r(i)*2) + 83.82);  %Assume new development (no road cutting, repaving, etc.)
      %Cdist(i)=length*(52.13*(r(i)*2) + 64.15);  %Assume BEST CASE development (single pipe, no road cutting, no repaving, etc.)
  elseif pipenumber(i)<6
      %that's just a simplification. We are not really sure how many times we are going to account for paving costs
Cdist(i)=(1+(pipenumber(i)-1)*(1-0.2876))*length*(80.08*(r(i)*2) + 195.96);    %Supply and return pipe
%Cdist(i)=(1+(pipenumber(i)-1)*(1-0.2876))*length*(56.17*(r(i)*2) + 176.29);    %Assume single loop (no return pipe)
%Cdist(i)=(1+(pipenumber(i)-1)*(1-0.2876))*length*(76.035*(r(i)*2) + 83.82);    %Assume new development (no road cutting, repaving, etc.)
%Cdist(i)=(1+(pipenumber(i)-1)*(1-0.2876))*length*(52.13*(r(i)*2) + 64.15);    %Assume BEST CASE development (single pipe, no road cutting, no repaving, etc.)
```

```
  else
Cdist(i)=(2+(pipenumber(i)-2)*(1-0.2876))*length*(80.08*(r(i)*2) + 195.96);    %Supply and return pipe
%Cdist(i)=(2+(pipenumber(i)-2)*(1-0.2876))*length*(56.17*(r(i)*2) + 176.29);    %Assume single loop (no return pipe)
%Cdist(i)=(2+(pipenumber(i)-2)*(1-0.2876))*length*(76.035*(r(i)*2) + 83.82);    %Assume new development (no road cutting, repaving, etc.)
%Cdist(i)=(2+(pipenumber(i)-2)*(1-0.2876))*length*(52.13*(r(i)*2) + 64.15);    %Assume BEST CASE development (single pipe, no road cutting, no repaving, etc.)
  end


end

%Now find costs of service lines, heat exchangers, interior equipment, etc.

BldgCost1 = zeros(13,1);
BldgCost2 = zeros(13,1);

Loopin = Tsr0;          %Return temperature of heating loop (secondary fluid from radiators)
Loopout = Tss0;          %Supply temperature of heating loop (secondary fluid to radiators)

%Figure cost of service lines to buildings

BldgCount = [detached; attached; bldg2 4; bldg5 19; bldg20 49; bldg50 plus; com bldgs];     %Number of buildings of each size category
UnitsPerBldg = [1 2 3 13 35 65 com units/com bldgs];                                        %Assumed number units per bldg category (detached, attached, 2-4, 5-19, 20-49, 50+)
PeakLoads = (PeakUnitDmnd*1055/3600)*UnitsPerBldg;                         %Estimated peak load per building [Watts thermal]
ReqKgs = (PeakLoads/(4.2*(Loopout-Loopin)))/1000;                            %Estimated peak massflow per building [kgs]
ReqSrvcDiam = 1.5197*(ReqKgs.^0.427);                                        %Calculated diameter of req'd service pipes [inches] (from piping spreadsheet)
CostSrvcPerMeter = 132.97*ReqSrvcDiam + 53.09;                              %Estimated cost of service lines for each building type [$/m]
TotSrvcLineCost = CostSrvcPerMeter*BranchDistance*BldgCount;                %Estimated total cost of service lines for community [$]

%Figure cost of building heat exchangers (for retrofit option 1)

GFin = Tps0;                   %Design supply temperature of network (geofluid from well)
GFout = Tpr0;        %Design return temperature of network (geofluid to well)

DelT10 = GFin - Loopout;
DelT20 = GFout - Loopin;
LMTD0 = (DelT10 - DelT20)/log(DelT10/DelT20);        %Log mean temperature difference for HX
HXAream = PeakLoads/(U0*LMTD0);                     %Req'd area of HX for buildings [m2]
HXArea = HXAream*10.764;                            %Req'd HX area [ft2]
```

```
CostPerFt = 230.07*HXArea.^-0.379;              %Cost of HX [$/ft2]
HXCost = HXArea.*CostPerFt;                              %Cost of HX's for each building category [$]
OtherCost = [3000 3000 4000 5000 6000 8000 8000*com_units/com_bldgs]; %Estimated cost of add'l building components (hot water retrofit, booster pump, etc. - Rafferty 2003)
NetBldgCost = HXCost + 1.10*OtherCost;
TotBldgCost1 = NetBldgCost*BldgCount;                         %Total cost of building equipment for retrofit option 1 (heat HX's, pumps, hot water retrofit, booster pump (large bldg only))
TotBldgCost2 = OtherCost*BldgCount;                          %Estiamted cost of building equipment for retrofit option 2 (booster pumps (large bldg only), hot water retrofit)

%Figure cost of interior equipment (per unit)
UnitCost = 2000;                          %Estimated cost to install controls, piping, etc. for each ind'l unit (Rafferty 2003, BioRegional 2012)

%Peaking equipment calculations
PeakMBTUperHr = PeakMW*3412141/1000;                                    %Excess peak MBTU/hr req'd
PeakBoilerCost0 = max(0,((PeakMBTUperHr)*50)^0.95);                       %Cost of peak boilers (Estimated from CEE 2001)
PeakBoilerCost(1:13,1) = PeakBoilerCost0;

PeakFuelCost = max(0,(((PeakMBTUperHr*30)/0.8)/1020)*GasPrice);        %Annual cost of peaking fuel in 2011 dollars

%Figure cost if central plant is used (retrofit option 2)
HXAreaCentralft = Proportion1plant*HXAreaCentral*10.764;              %Size of central plant HX

%CentralPlantCost = 49117*log(Qmax)+83651;                %Assumed cost of central heat exchange facility (Rafferty 1996) [$/MWth] (for retrofit option 2)
CentralPlantCost = 34480*log(Qmax)+74979+(230.07*HXAreaCentralft^-0.379)*HXAreaCentralft;     %Assumed cost of central HX facility with new HX sizes...

    BldgCost1(1:13,1) = 1.00*(TotSrvcLineCost*Proportion1plant + (res_units+com_units)*UnitCost*Proportion1plant + TotBldgCost1*Proportion1plant);
    BldgCost2(1:13,1) = 1.00*(TotSrvcLineCost*Proportion1plant + (res_units+com_units)*UnitCost*Proportion1plant + TotBldgCost2*Proportion1plant + CentralPlantCost);

BldgCost = zeros(13,1);

if DelT10<=0
  SystemSetup = {'IMPOSSIBLE'};
elseif DelT20<=0
    SystemSetup = {'IMPOSSIBLE'};
elseif BldgCost1(1,1) > BldgCost2(1,1);
        BldgCost = BldgCost2;
        SystemSetup = {'Indirect'};
elseif BldgCost1(1,1) < BldgCost2(1,1);
        BldgCost = BldgCost1;
        SystemSetup = {'Centralized'};
else BldgCost = BldgCost1;
    SystemSetup = {'Either'};
```

```
end


%now find the total investment cost, consisting of pumps and piping costs.
totalcost=zeros(13,1);

totalcost(:,1)=Cdist(:,1)+PumpIC(:,1)+BldgCost(:,1)+PeakBoilerCost(:,1);

LCOheat=zeros(13,1);
LCOheatnominator=zeros(13,payback);
LCOheatdenominator=zeros(13,payback);
dolperkwhheat=zeros(13,1);
centsperkwhheat=zeros(13,1);

for t=1:payback
    LCOheatnominator(:,t) = (totalcost + pumpingcost + networkservice*length +
    PeakFuelCost)/((1+discount)^t);
    LCOheatdenominator(:,t) = MOgeo/((1+discount)^t);
end

for i=1:13
LCOheat(i) = sum(LCOheatnominator(i,:))/sum(LCOheatdenominator(i,:));
dolperkwth = LCOheat./1000;


%Optimization loop optimized for minimum LCOH
    minLCOH = 10000;
    for j=1:13;
        if dolperkwth(j)<minLCOH;
            minLCOH=dolperkwth(j);
            minIC=totalcost(j);
            minoperating=(networkservice*length+pumpingcost(j))+PeakFuelCost;
            doptimum=2*r(j);
            numberoptimum=pipenumber(j);
        else
        end
    end

   minopannualmillions=(minoperating)/1000000;

end
```

Appendix F: Base-Case Optimal Temperature Results

The following table contains the LCOH, optimal production temperature, peak power, capacity factor, drilling investment, and surface investment for a single EGS doublet plant at each "place", as well as the total number of plants required to meet full demand in each community, for both the initial and commercially mature cases. Several key demographics and statistics (such as population, total building floorspace, net annual demand, and geothermal gradient) are presented for each place as well.

The table is presented in two parts. The first part, starting on page 173, presents basic community information for each place, including the name and GeoID of each "place." The second part, beginning on page 227, presents the LCOH and modeling results for each "place," referenced to the place GeoID. To find the LCOH of a particular town or community, first find the town in the first part of the table (p. 173-226), determine the GeoID of that place, and then find that GeoID in the second part of the table (p. 227-277). Both portions of the table are sorted by GeoID (which is also alphabetical by "place" name by state, with NY starting with "36" and PA starting with "42").

Note that there is additional data that was stored but is not presented here due to space constraints. Additionally, the detailed individual results of all subsequent analyses presented in sections 4.2 through 4.4 are also omitted due to space constraints. For inquiries regarding those results or to request electronic copies, please contact the author.

State	GeoID	Geographic area	Total Population	Population Dens. /km2	Residential Units	Commercial Units (est.)	Floorspace Total (sq. ft)	Network Length (m)	Net Demand MMBTU/yr	Ave. Temp Annual (°C)	Min Temp January (°C)	Geothermal Gradient (°C/km)
NY	3600155	Accord CDP	562	51.6	134	7.8	462678	23165	21843.8	9.4	-9.4	27.49
NY	3600199	Adams village	1775	294.1	798	26.1	2062580	14607	104235.2	6.9	-12.3	24.15
NY	3600232	Adams Center CDP	1568	94.3	545	23.1	1595270	27461	82845.3	6.8	-12.5	24.15
NY	3600276	Addison village	1763	277.1	769	14.6	2110363	21924	101256.0	7.9	-10.4	24.30
NY	3600342	Afton village	822	175.3	442	9.5	1235684	11864	53046.2	7.7	-11.0	24.49
NY	3600408	Airmont village	8628	658.7	2766	76.1	8495332	68971	290715.8	10.1	-7.6	24.15
NY	3600441	Akron village	2868	452.5	1264	41.8	3286230	23397	104807.8	8.2	-9.2	26.90
NY	3601000	Albany city	97856	1705.8	48211	2657.0	107407725	376874	5350815.9	8.6	-10.9	26.15
NY	3601011	Albertson CDP	5182	3105.3	1872	127.8	7560381	17557	306417.0	11.5	-4.3	24.15
NY	3601033	Albion village	6056	865.8	2241	33.1	5183070	38838	208320.8	8.2	-9.4	23.07
NY	3601088	Alden village	2605	317.5	964	31.5	2624215	19594	105696.6	8.0	-9.4	30.98
NY	3601154	Alexander village	509	95.2	214	3.8	568957	4910	27289.5	7.8	-9.9	21.31
NY	3601187	Alexandria Bay village	1078	428.8	750	15.9	1852512	13008	86381.0	6.9	-13.1	24.15
NY	3601198	Alfred village	4174	805.7	641	41.4	1455916	16983	72709.5	6.4	-11.8	24.67
NY	3601286	Allegany village	1816	715.3	909	23.4	2459739	13924	108053.9	7.0	-11.4	31.65
NY	3601440	Almond village	466	179.7	230	4.3	610728	8004	30714.7	7.3	-11.1	22.76
NY	3601517	Altamont village	1720	417.0	698	37.6	2309528	13939	100385.3	8.1	-11.5	23.78
NY	3601550	Altmar village	407	59.9	93	1.4	256050	13879	12661.8	7.3	-11.7	24.15
NY	3601572	Altona CDP	730	123.7	116	4.4	321825	8447	17901.1	6.0	-14.6	24.15
NY	3601594	Amagansett CDP	1165	64.7	1844	38.1	5948114	69472	197163.1	10.3	-5.2	24.15
NY	3601682	Amenia CDP	955	205.9	465	10.0	1057515	14760	49646.8	8.5	-10.6	24.15
NY	3601737	Ames village	145	89.5	67	1.9	218872	1846	10979.5	7.7	-12.0	23.21
NY	3602044	Amityville village	9523	1715.0	3505	193.4	10595402	50829	396639.2	11.5	-4.3	24.15
NY	3602066	Amsterdam city	18620	1111.0	9615	420.0	22316713	110660	1128382.1	8.0	-11.6	26.06
NY	3602121	Andes CDP	252	79.8	215	3.8	601344	10478	32193.1	6.2	-12.8	23.91
NY	3602143	Andover village	1042	251.3	531	9.6	1530619	12855	72319.3	6.7	-11.7	24.84
NY	3602176	Angelica village	869	117.5	409	8.0	1261188	22657	64431.7	7.1	-11.5	21.23
NY	3602198	Angola village	2127	420.6	838	22.9	2456201	20475	104060.5	8.5	-8.7	25.85
NY	3602220	Angola on the Lake CDP	1675	252.0	724	18.1	2280040	23250	102182.2	8.6	-8.7	26.12
NY	3602286	Antwerp village	686	161.8	294	10.1	962643	10401	51397.3	6.6	-13.8	24.15
NY	3602308	Apalachin CDP	1131	261.5	484	8.8	1281560	11387	61071.9	8.2	-9.6	25.09
NY	3602374	Aquebogue CDP	2438	237.2	1017	88.1	4529401	34346	201288.7	10.6	-5.2	24.15
NY	3602407	Arcade village	2071	215.2	942	25.6	2378130	20706	105240.5	7.0	-11.4	24.94
NY	3602506	Ardsley village	4452	1112.5	1582	99.8	5761973	29167	197042.1	10.9	-6.1	24.15
NY	3602550	Argyle village	306	187.0	161	3.7	408965	3123	19820.1	7.9	-12.9	24.15
NY	3602583	Arkport village	844	204.0	297	7.0	909993	8444	45392.0	7.6	-10.6	21.83
NY	3602616	Arlington CDP	4061	2002.5	1337	81.3	3098589	16393	98678.4	9.5	-9.1	24.15
NY	3602649	Armonk CDP	4330	209.5	1354	182.7	6826705	69640	287329.9	10.2	-7.0	24.15
NY	3602737	Asharoken village	654	289.7	312	19.6	1258314	12599	50371.3	11.0	-5.3	24.15
NY	3602902	Athens village	1668	277.5	755	29.0	2337932	27817	94076.2	9.1	-10.6	24.15
NY	3603001	Attica village	2547	492.0	1075	21.2	2628803	17770	105506.6	7.7	-10.0	20.46
NY	3603078	Auburn city	27687	1377.5	13102	769.0	35132388	147364	1819205.6	8.2	-9.4	29.86
NY	3603188	Aurora village	724	206.5	163	6.4	483537	6753	22526.8	8.6	-9.0	31.48
NY	3603254	Au Sable Forks CDP	559	105.5	260	3.4	561366	20749	29538.6	6.3	-14.5	24.15
NY	3603320	Averill Park CDP	1693	185.4	749	18.1	2055046	34562	95193.6	7.7	-11.7	24.15
NY	3603331	Avoca village	946	217.6	319	7.8	947821	12460	47451.4	7.6	-10.6	24.54
NY	3603353	Avon village	3394	357.3	1427	64.5	4046770	28501	102852.3	8.4	-9.4	24.85
NY	3603408	Babylon village	12166	1861.6	4613	247.0	15401293	59662	600394.0	11.4	-4.4	24.15
NY	3604033	Bainbridge village	1355	316.3	649	15.6	1631342	14538	80703.0	7.5	-11.2	24.07
NY	3604055	Baiting Hollow CDP	1642	133.9	1232	59.4	4142983	29082	100737.4	10.7	-5.2	24.15
NY	3604143	Baldwin CDP	24033	3182.6	8038	336.8	26911441	74409	1019806.8	11.7	-3.8	24.15
NY	3604154	Baldwin Harbor CDP	8102	1571.8	2785	113.5	10073003	26449	305306.8	11.7	-3.8	24.15
NY	3604198	Baldwinsville village	7378	719.8	3387	56.6	8269045	46026	311946.7	8.3	-9.5	25.61
NY	3604253	Ballston Spa village	5409	951.1	2414	35.6	5222328	32321	199905.2	8.0	-11.8	27.87
NY	3604286	Balmville CDP	3178	798.2	1351	61.8	4628797	40454	192639.8	9.9	-8.3	24.15

NY	3604396	Bardonia CDP	4108	559.3	1443	128.5	6126481	43269	193224.0	10.8	-6.7	24.15
NY	3604440	Barker village	533	222.2	232	0.5	584831	5716	26201.7	8.5	-8.8	24.15
NY	3604528	Barneveld village	284	358.6	130	2.2	356681	3095	18260.1	6.8	-13.1	24.15
NY	3604715	Batavia city	15465	1072.6	6866	468.0	20742151	85137	1084153.5	7.9	-9.7	23.37
NY	3604759	Bath village	5786	599.4	2832	39.8	6268575	47866	208492.5	7.6	-10.5	27.58
NY	3604891	Bay Park CDP	2212	1528.0	803	31.0	2926318	7979	101513.0	11.8	-3.8	24.15
NY	3604913	Bayport CDP	8896	976.9	3561	187.9	10609411	69143	395542.6	11.1	-4.7	24.15
NY	3604935	Bay Shore CDP	26337	1711.8	9526	556.4	28068184	125586	1102316.2	11.3	-4.5	24.15
NY	3605034	Bayville village	6669	1947.7	2521	189.8	10299013	32543	400270.2	11.3	-5.1	24.15
NY	3605039	Baywood CDP	7350	1444.9	2398	155.3	9604564	48115	301029.5	11.2	-4.5	24.15
NY	3605100	Beacon city	15541	962.3	6062	204.0	15390724	76215	681873.5	10.0	-8.6	24.15
NY	3605193	Beaver Dam Lake CDP	2242	394.9	914	47.3	3421571	24876	97561.8	9.8	-8.3	24.15
NY	3605309	Bedford CDP	1834	183.9	669	75.6	3307760	33265	95833.3	10.0	-7.4	24.15
NY	3605342	Bedford Hills CDP	3001	718.8	1280	123.7	3882622	20819	97936.7	10.1	-7.5	24.15
NY	3605562	Belfast CDP	837	135.4	408	17.0	1338527	15024	47440.8	7.3	-11.2	23.23
NY	3605639	Bellerose village	1193	4136.0	410	16.7	1475727	3229	53306.9	11.7	-4.0	24.15
NY	3605661	Bellerose Terrace CDP	2198	4708.8	626	30.8	2103997	3189	84651.4	11.7	-4.0	24.15
NY	3605672	Belle Terre village	792	524.7	387	12.2	1360921	17449	56860.3	10.7	-5.3	24.15
NY	3605683	Belleville CDP	226	36.4	770	20.0	2337623	26893	8578.2	7.2	-11.7	24.15
NY	3605738	Bellmore CDP	16218	2263.1	5745	227.3	20192883	58609	711239.7	11.6	-4.0	24.15
NY	3605771	Bellport village	2084	497.7	1164	32.0	3944206	25578	99461.2	11.0	-4.9	24.15
NY	3605815	Belmont village	969	224.8	446	8.9	1166592	10395	54201.2	7.2	-11.3	22.09
NY	3605848	Bemus Point village	364	422.2	229	3.7	609730	7067	28868.5	7.9	-9.7	24.16
NY	3606046	Bergen village	1176	366.0	436	8.8	1233022	11217	53201.6	8.3	-9.3	20.43
NY	3606387	Bethpage CDP	16429	1914.9	5955	467.5	23155997	75515	912401.6	11.3	-4.4	24.15
NY	3606464	Big Flats CDP	5277	108.2	2087	178.5	7484786	121553	292067.4	8.1	-10.1	28.04
NY	3606574	Billington Heights CDP	1685	309.9	675	26.6	2340740	27819	102381.2	7.9	-9.6	31.69
NY	3606607	Binghamton city	47376	1534.3	24595	1040.0	57825945	235358	2839089.0	8.1	-9.9	23.49
NY	3606794	Black River village	1348	220.3	675	19.8	1943826	15587	101584.9	6.8	-13.4	24.15
NY	3606849	Blasdell village	2553	1075.7	1293	34.5	3073193	15586	105114.6	8.5	-9.0	26.25
NY	3606860	Blauvelt CDP	5689	420.9	1561	118.7	6629915	59745	287271.9	10.9	-6.4	24.15
NY	3606904	Bliss CDP	527	20.1	255	6.5	810572	33628	42907.1	6.4	-11.8	23.83
NY	3606937	Blodgett Mills CDP	303	38.2	76	7.9	336003	10288	18134.3	7.3	-10.3	27.35
NY	3606945	Bloomfield village	1361	193.1	532	9.6	1363051	11053	64541.9	8.0	-9.5	29.44
NY	3606959	Bloomingburg village	420	301.5	184	4.1	390973	2982	17376.1	9.4	-9.4	24.67
NY	3607025	Bloomville CDP	213	37.3	107	3.2	330810	9886	17959.3	6.4	-12.6	22.69
NY	3607069	Blue Point CDP	4773	1041.7	1730	73.3	6222628	33985	200598.7	11.1	-4.7	24.15
NY	3607157	Bohemia CDP	10180	509.4	3190	215.1	10914189	90107	390721.4	11.1	-4.8	24.15
NY	3607190	Bolivar village	1047	378.2	510	9.6	1370657	11393	71435.8	6.7	-11.9	26.94
NY	3607245	Bolton Landing CDP	513	183.3	580	15.6	1847013	15526	93825.7	7.4	-13.3	24.15
NY	3607355	Boonville village	2072	360.3	977	15.9	2307206	19692	103963.5	6.0	-14.0	24.15
NY	3608004	Breesport CDP	626	120.8	234	6.5	801835	13293	39286.2	7.7	-10.5	27.77
NY	3608026	Brentwood CDP	60664	1812.1	14184	1281.6	57618861	209255	2432957.0	11.1	-4.7	24.15
NY	3608059	Brewerton CDP	4029	418.3	1688	69.4	4962867	38003	202734.6	8.2	-10.1	21.70
NY	3608070	Brewster village	2390	895.8	874	70.1	1912667	9007	83260.8	9.7	-8.5	24.15
NY	3608092	Brewster Hill CDP	2089	757.5	933	61.3	3684285	18991	100075.4	9.4	-8.6	24.15
NY	3608103	Briarcliff Manor village	7867	449.2	2649	28.9	7075047	89070	280120.6	10.6	-6.8	24.15
NY	3608136	Bridgehampton CDP	1756	50.9	2070	53.2	7045599	119951	283690.8	10.4	-5.2	24.15
NY	3608147	Bridgeport CDP	1490	233.1	825	25.7	2559297	11624	104098.0	8.1	-10.4	23.02
NY	3608169	Bridgewater village	470	169.3	91	3.6	199159	5632	10607.4	6.8	-12.1	20.14
NY	3608257	Brighton CDP	36609	817.1	17557	946.0	48493879	226083	2511449.9	8.6	-8.9	21.03
NY	3608323	Brightwaters village	3103	1269.9	1094	65.6	4182342	25586	99012.0	11.3	-4.5	24.15
NY	3608334	Brinckerhoff CDP	2900	668.0	1075	62.8	4003525	20813	99013.2	9.7	-8.7	24.15
NY	3608422	Broadalbin village	1327	295.4	566	15.6	1794576	14322	86395.5	7.1	-12.4	27.22
NY	3608466	Brockport village	8366	1303.7	2522	52.6	5595404	35010	207177.8	8.3	-9.4	18.12
NY	3608488	Brocton village	1486	294.4	684	10.4	1754477	14981	80014.1	8.7	-8.4	27.35
NY	3608532	Bronxville village	6323	2110.7	2507	135.6	6047578	24656	197246.0	11.3	-5.4	24.15

NY	3609000	Brookhaven CDP	3451	198.9	1104	53.0	4253780	49333	96592.9	11.0	-4.8	24.15
NY	3610132	Brookville village	3465	218.1	663	98.6	3738763	41568	96200.8	11.2	-4.7	24.15
NY	3610231	Brownville village	1119	444.9	436	9.1	1181729	8539	53399.9	7.2	-12.4	24.15
NY	3610286	Brushton village	474	312.9	236	3.2	655176	4831	34707.4	6.2	-14.8	24.15
NY	3610341	Buchanan village	2230	752.9	899	28.1	2598792	15247	96611.5	10.7	-7.1	24.15
NY	3611000	Buffalo city	261310	2624.8	138847	4679.0	294825092	843706	14410182.5	8.4	-8.6	27.04
NY	3611132	Burdett village	340	78.3	138	2.7	436016	6779	20870.9	7.9	-10.4	24.23
NY	3611154	Burke village	211	99.7	86	1.4	243767	2206	13468.8	5.5	-15.1	24.15
NY	3611440	Busti CDP	391	61.3	169	10.9	481159	12656	23828.7	7.8	-9.8	26.37
NY	3611550	Byersville CDP	47	27.7	34	0.4	107350	3284	5320.8	7.2	-10.6	24.15
NY	3611638	Cairo CDP	1402	122.3	899	19.0	2146051	38587	92542.6	8.4	-11.0	22.61
NY	3611671	Calcium CDP	3491	281.5	1442	20.1	2409828	38179	96808.3	6.9	-12.9	24.15
NY	3611704	Caledonia village	2201	358.4	1011	18.6	2789034	20426	103846.0	8.4	-9.2	22.77
NY	3611748	Callicoon CDP	167	72.7	106	2.9	363166	6133	17664.9	8.1	-11.3	23.99
NY	3611781	Calverton CDP	6510	72.2	2222	235.3	9582806	140263	383074.1	10.7	-5.1	24.15
NY	3611825	Cambridge village	1870	353.5	671	22.4	1884405	20149	93632.5	7.8	-12.7	24.15
NY	3611847	Camden village	2231	369.5	978	38.7	2758487	25628	101941.7	7.3	-11.7	24.15
NY	3611902	Camillus village	1213	670.5	614	16.3	1405282	8276	68473.5	8.4	-9.9	21.44
NY	3611935	Campbell CDP	713	143.4	276	5.9	873228	17637	42493.3	7.9	-10.4	29.07
NY	3612111	Canajoharie village	2229	374.4	1002	28.5	2823544	21644	100536.7	7.9	-11.3	23.99
NY	3612144	Canandaigua city	10545	895.3	5034	379.0	14551462	67046	740607.0	8.4	-9.2	25.82
NY	3612177	Canaseraga village	550	152.9	230	5.0	679294	7963	34223.5	7.4	-11.0	24.16
NY	3612188	Canastota village	4804	514.3	2050	91.3	5704745	45046	200663.2	7.9	-11.0	21.46
NY	3612210	Candor village	851	384.0	311	5.4	859688	6734	40331.4	8.1	-10.2	24.09
NY	3612254	Canisteo village	2270	638.8	910	18.8	2713967	18169	103711.0	7.7	-10.7	22.05
NY	3612353	Cape Vincent village	726	159.1	418	10.7	1154649	11662	59364.5	7.0	-12.3	24.15
NY	3612419	Carle Place CDP	4981	1536.7	1920	122.8	6851986	22039	203499.3	11.5	-4.1	24.15
NY	3612532	Carmel Hamlet CDP	6817	242.0	2499	165.9	9260441	81861	391043.4	9.5	-8.5	24.15
NY	3612584	Caroga Lake CDP	518	87.7	871	3.1	2625464	26132	105353.7	5.9	-13.3	27.19
NY	3612683	Carthage village	3747	509.7	1668	51.1	4040788	23643	209270.4	6.4	-13.7	24.15
NY	3612749	Cassadaga village	634	174.9	291	6.5	926018	10512	44547.1	7.8	-9.5	21.99
NY	3612771	Castile village	1015	195.7	553	12.5	1468964	12789	72308.8	7.2	-10.4	24.60
NY	3612870	Castleton-on-Hudson village	1473	557.5	627	17.3	1790672	10982	83035.7	8.7	-10.9	26.28
NY	3612881	Castorland village	351	147.8	109	4.7	289384	2858	16280.9	6.3	-13.8	24.15
NY	3612958	Cato village	532	154.7	259	4.7	620564	5986	28712.3	8.3	-9.2	20.83
NY	3613002	Catskill village	4081	585.5	1652	89.9	4663020	31275	195605.1	9.1	-10.4	24.59
NY	3613024	Cattaraugus village	1002	263.9	490	11.5	1427155	11710	71582.9	7.4	-10.7	29.98
NY	3613068	Cayuga village	549	180.8	210	4.8	627035	8795	28597.4	8.7	-8.9	33.08
NY	3613079	Cayuga Heights village	3729	1794.6	1683	40.1	4007041	36252	103370.1	8.2	-9.5	31.15
NY	3613145	Cazenovia village	2835	416.7	1245	63.1	3588639	19196	107493.4	6.8	-11.7	27.76
NY	3613233	Cedarhurst village	6592	3171.8	2354	92.4	6377597	16787	203775.6	11.8	-3.7	24.15
NY	3613288	Celoron village	1112	742.5	509	27.5	1772402	13864	89076.4	7.8	-9.6	24.81
NY	3613376	Centereach CDP	31578	1426.6	10360	484.8	37391634	185868	1515126.8	10.9	-5.1	24.15
NY	3613420	Center Moriches CDP	7580	510.3	2888	116.4	10339836	74945	400001.1	10.9	-4.9	24.15
NY	3613442	Centerport CDP	5508	935.7	2143	165.0	9208992	40436	300447.7	11.0	-5.2	24.15
NY	3613530	Central Bridge CDP	593	90.5	306	4.2	644393	11965	31486.9	7.6	-11.6	23.31
NY	3613552	Central Islip CDP	34450	1637.1	10198	727.8	35010812	141497	1413298.9	11.1	-4.7	24.15
NY	3613585	Central Square village	1848	244.6	753	25.2	1793214	18443	84823.4	8.1	-10.3	21.05
NY	3613618	Centre Island village	410	138.9	222	11.7	839014	10336	34698.6	11.2	-5.1	24.15
NY	3613662	Chadwicks CDP	1506	313.4	522	42.1	1636339	14003	85631.2	7.4	-12.1	22.24
NY	3613739	Champlain village	1101	258.8	481	26.0	1364096	17354	67047.5	6.5	-14.4	24.15
NY	3613805	Chappaqua CDP	1436	887.5	445	34.3	1425421	10580	64985.0	10.2	-7.2	24.15
NY	3613981	Chateaugay village	833	233.3	275	5.7	743906	7650	41581.7	5.4	-15.2	24.15
NY	3614003	Chatham village	1770	340.2	1001	44.4	2844760	17028	99870.3	8.2	-11.3	24.15
NY	3614036	Chaumont village	624	138.9	257	9.2	804071	10342	41260.2	7.1	-12.3	24.15
NY	3614058	Chautauqua CDP	191	136.5	1328	1.9	2534665	10976	108285.4	7.9	-9.2	24.42

NY	3614102	Chazy CDP	565	106.5	222	3.4	671814	15991	35085.0	6.5	-14.3	24.15
NY	3615000	Cheektowaga CDP	75178	1179.1	34183	1318.4	97505636	392620	4610384.0	8.4	-8.7	29.14
NY	3615121	Chenango Bridge CDP	2883	398.9	1241	33.2	4177675	27227	103435.7	8.0	-10.2	24.33
NY	3615187	Cherry Creek village	461	125.9	153	4.7	499592	10148	24393.5	7.7	-9.8	23.85
NY	3615242	Cherry Valley village	520	148.5	231	4.3	633900	7179	33239.7	6.6	-12.9	22.50
NY	3615297	Chester village	3969	282.0	1814	70.0	4518751	33535	194023.1	9.7	-8.6	24.15
NY	3615363	Chestertown CDP	677	54.5	443	20.6	1308937	23974	72178.1	6.3	-14.1	24.15
NY	3615400	Chestnut Ridge village	7916	671.2	2534	69.8	8314422	78641	289644.5	10.4	-6.9	24.15
NY	3615561	Chittenango village	5081	524.6	2238	51.5	6147290	39980	204244.2	8.0	-10.8	25.22
NY	3615638	Churchville village	1961	324.5	892	21.4	2390269	17003	102916.3	8.4	-9.1	20.24
NY	3615814	Clarence CDP	2646	325.0	1066	63.1	3372712	29012	104255.7	8.2	-9.1	28.82
NY	3615836	Clarence Center CDP	2257	253.7	805	53.8	3120370	22225	104542.8	8.4	-8.9	28.67
NY	3615902	Clark Mills CDP	1905	406.1	689	33.5	1559006	15081	82229.5	7.8	-11.4	22.47
NY	3615946	Clarkson CDP	4358	228.4	1372	44.8	4274521	41699	202772.4	8.4	-9.1	18.43
NY	3616050	Claverack-Red Mills CDP	913	119.7	506	10.2	1436894	18078	64299.6	8.8	-10.8	24.15
NY	3616089	Clayton village	1978	402.0	1055	29.1	2758329	21820	102214.2	6.9	-12.8	24.15
NY	3616111	Clayville village	350	207.7	217	2.7	534977	6971	27131.9	6.8	-12.4	21.38
NY	3616188	Cleveland village	750	357.7	354	5.2	1054391	12312	50848.4	7.8	-11.0	22.40
NY	3616375	Clifton Springs village	2127	472.8	1035	24.8	2416484	16863	103592.7	8.5	-9.1	27.60
NY	3616419	Clinton village	1942	637.8	1039	34.2	2526607	12805	101798.0	7.6	-11.9	21.69
NY	3616452	Clintondale CDP	1452	107.4	331	10.7	1079649	27418	49968.8	9.0	-9.4	24.15
NY	3616573	Clyde village	2093	352.2	904	11.7	2488392	25367	100540.5	8.6	-8.9	23.66
NY	3616628	Cobleskill village	4678	456.9	1964	142.3	5431015	33777	207807.3	7.3	-12.1	22.86
NY	3616727	Cohocton village	838	160.7	404	6.9	1148763	14002	53447.9	7.4	-10.7	25.96
NY	3616749	Cohoes city	16168	1498.6	8243	175.2	16039389	77937	698426.4	8.7	-10.8	26.81
NY	3616815	Cold Brook village	329	85.1	152	2.9	459652	2418	24134.3	6.5	-13.5	24.15
NY	3616936	Cold Spring village	2013	764.8	864	47.9	2390885	13295	96376.9	10.4	-7.8	24.15
NY	3616958	Cold Spring Harbor CDP	5070	534.6	1815	151.9	7883353	51598	296686.2	11.0	-5.1	24.15
NY	3617332	Colonie village	7793	833.5	3270	226.1	12474735	60944	601343.7	8.4	-11.0	25.13
NY	3617530	Commack CDP	36124	1154.5	11730	1045.0	51299268	252917	2211812.3	11.0	-5.1	24.15
NY	3617620	Conesus Hamlet CDP	308	64.8	76	2.6	266436	9330	13612.2	7.4	-10.8	27.48
NY	3617622	Conesus Lake CDP	2584	246.6	1746	42.0	5919137	45596	204755.9	8.2	-10.0	27.82
NY	3617739	Congers CDP	8363	1004.2	2870	261.5	12062034	61476	489490.9	10.8	-6.8	24.15
NY	3617882	Constableville village	242	70.6	144	3.2	414167	7099	23225.1	5.7	-14.1	24.15
NY	3617893	Constantia CDP	1182	175.2	578	8.2	1762490	24476	82833.0	8.0	-10.5	22.55
NY	3618036	Coopers Plains CDP	598	169.3	219	9.0	666311	8405	33375.6	8.1	-10.3	24.25
NY	3618047	Cooperstown village	1852	412.7	1037	84.3	3345810	23609	107575.4	6.7	-12.2	22.27
NY	3618124	Copake Lake CDP	823	35.6	836	14.8	2688248	60601	91408.1	7.9	-11.2	24.15
NY	3618135	Copenhagen village	801	160.8	286	10.6	755239	8429	43565.7	5.8	-14.1	24.15
NY	3618146	Copiague CDP	22993	2377.7	7880	466.8	26125163	77271	1004502.4	11.5	-4.3	24.15
NY	3618157	Coram CDP	39113	957.7	15025	600.5	38353620	232267	1606338.6	10.8	-5.2	24.15
NY	3618201	Corfu village	709	184.9	315	5.3	861300	7873	40775.3	7.9	-9.5	25.02
NY	3618212	Corinth village	2559	522.4	1160	24.5	3034055	19982	100134.6	7.4	-13.0	24.15
NY	3618256	Corning city	11183	1223.6	5685	326.0	16352430	73523	838424.8	8.2	-10.3	26.73
NY	3618333	Cornwall-on-Hudson village	3018	373.8	1293	51.6	4082171	31792	97096.8	9.9	-8.3	24.15
NY	3618388	Cortland city	19204	1581.2	7783	451.0	20254755	74428	1083694.5	7.7	-10.1	26.86
NY	3618443	Cortland West CDP	1356	295.3	515	35.5	1959974	34380	100316.7	7.5	-10.0	25.79
NY	3618542	Country Knolls CDP	2224	457.1	694	52.3	3003982	25562	98760.9	8.2	-11.4	26.92
NY	3618597	Cove Neck village	286	107.3	131	8.1	523204	8371	22056.3	11.1	-5.1	24.15
NY	3618718	Coxsackie village	2813	450.8	1240	33.5	3190027	24990	97298.2	8.9	-10.7	25.32
NY	3618762	Cragsmoor CDP	449	44.0	325	5.3	1003680	26990	49732.2	7.5	-10.1	26.76
NY	3619070	Croghan village	618	289.1	318	8.2	729731	5444	40146.2	6.1	-14.3	24.15
NY	3619092	Crompond CDP	2292	320.6	714	60.3	2733707	28308	96547.8	10.0	-7.7	24.15
NY	3619213	Croton-on-Hudson village	8070	489.2	3132	101.6	8872068	66581	286300.7	10.8	-6.9	24.15
NY	3619229	Crown Heights CDP	2840	938.5	1024	56.8	3495747	18251	98647.3	9.6	-9.0	24.15

NY	3619290	Crugers CDP	1534	528.8	881	19.3	1438285	11348	58501.5	10.8	-7.1	24.15
NY	3619308	Crystal Beach CDP	644	225.8	342	4.6	1027188	14529	47347.9	8.4	-9.6	25.08
NY	3619356	Cuba village	1575	410.6	713	14.4	1826544	18796	87909.5	6.8	-11.9	23.68
NY	3619408	Cumberland Head CDP	1627	156.3	835	47.5	3041140	32740	99407.4	6.8	-13.7	24.15
NY	3619466	Cutchogue CDP	3349	142.1	2344	100.8	8679312	100430	292910.5	10.5	-5.4	24.15
NY	3619510	Cuylerville CDP	297	124.2	126	2.5	380716	5295	17634.3	8.6	-9.1	25.25
NY	3619587	Dalton CDP	362	75.3	145	3.1	459448	7199	23079.1	7.3	-11.3	24.45
NY	3619642	Dannemora village	3936	1218.6	495	23.8	1623661	13964	89059.3	5.4	-14.8	24.15
NY	3619664	Dansville village	4719	680.4	2340	120.3	6528344	42485	307409.3	8.4	-9.9	24.96
NY	3619774	Davenport Center CDP	349	27.9	107	5.3	402411	14707	22180.0	6.7	-12.1	23.74
NY	3619972	Deer Park CDP	27745	1744.0	9908	563.3	34254533	126227	1307806.7	11.2	-4.6	24.15
NY	3619994	Deferiet village	294	105.1	206	4.0	547448	6317	29831.7	6.5	-13.6	24.15
NY	3620082	Delanson village	377	179.9	145	4.5	464275	5408	23530.7	7.3	-12.0	24.02
NY	3620115	Delevan village	1089	325.9	476	12.5	1155549	10143	55246.6	7.0	-11.4	22.51
NY	3620126	Delhi village	3087	252.4	1104	47.1	3020679	23451	105571.8	6.5	-12.5	20.94
NY	3620302	Depauville CDP	577	20.6	162	8.5	465992	33624	24660.0	6.9	-12.7	24.15
NY	3620313	Depew village	15303	1190.8	6791	268.4	20564211	91062	964251.1	8.4	-8.7	29.33
NY	3620346	Deposit village	1663	367.0	923	6.7	2173530	19890	100129.2	7.8	-11.4	23.19
NY	3620379	Dering Harbor village	11	32.0	53	0.3	162857	3819	6451.2	10.4	-5.6	24.15
NY	3620390	DeRuyter village	558	303.9	145	3.7	366809	4897	19043.2	7.0	-11.7	24.65
NY	3620500	Dexter village	1052	401.5	469	8.5	1160111	9855	53044.6	7.2	-12.2	24.15
NY	3620687	Dix Hills CDP	26892	699.0	8247	805.5	38526652	255536	1687864.7	11.0	-4.9	24.15
NY	3620698	Dobbs Ferry village	10875	1636.4	4274	243.8	10738821	45469	393286.7	11.1	-6.0	24.15
NY	3620731	Dolgeville village	2206	407.1	1153	19.4	2818050	21266	103200.4	7.0	-12.3	25.75
NY	3620841	Dover Plains CDP	1323	482.6	481	14.9	1135425	13214	49999.4	9.0	-10.1	24.15
NY	3620852	Downsville CDP	617	37.2	394	9.4	1114091	19400	57562.4	7.0	-12.2	22.13
NY	3620896	Dresden village	308	201.5	128	2.1	370069	4982	16624.8	8.8	-8.8	27.23
NY	3620951	Dryden village	1890	342.4	841	21.9	2319095	22946	103141.7	7.7	-10.0	25.83
NY	3620989	Duane Lake CDP	323	53.2	183	3.8	614249	13641	30664.1	7.3	-11.8	24.27
NY	3620995	Duanesburg CDP	391	54.2	91	4.7	325249	14160	16692.9	7.6	-11.8	24.39
NY	3621050	Dundee village	1725	401.1	686	11.9	1658349	15377	78550.7	8.0	-9.8	37.53
NY	3621105	Dunkirk city	12563	997.1	6413	216.0	18027099	88693	850591.8	8.7	-8.1	28.84
NY	3621226	Durhamville CDP	584	122.6	311	4.3	786141	9551	37119.8	7.9	-10.9	20.83
NY	3621523	Earlville village	872	220.9	342	17.6	1197082	7290	66615.8	7.1	-11.8	26.03
NY	3621589	East Aurora village	6236	776.8	2861	36.5	7100189	42130	318595.6	7.9	-9.7	30.37
NY	3621600	East Avon CDP	608	59.2	160	11.5	656661	6979	34208.0	8.2	-9.6	25.15
NY	3621809	Eastchester CDP	19554	1763.0	8439	419.3	21965075	71652	898246.9	11.1	-5.5	24.15
NY	3621985	East Farmingdale CDP	6484	580.4	2077	131.7	6659396	67767	191448.3	11.3	-4.4	24.15
NY	3622065	East Garden City CDP	6208	649.7	919	87.0	2117406	49927	87571.9	11.6	-4.2	24.15
NY	3622084	East Glenville CDP	6616	334.9	2581	62.7	7625287	68308	293878.4	8.3	-11.2	26.32
NY	3622106	East Greenbush CDP	4487	616.4	1818	88.5	5561380	38552	198794.0	8.4	-11.1	26.64
NY	3622183	East Hampton village	1083	69.2	1795	35.5	5828524	65807	196775.6	10.4	-5.2	24.15
NY	3622200	East Hampton North CDP	4142	216.4	2449	135.6	9157979	76114	302188.7	10.3	-5.3	24.15
NY	3622260	East Hills village	6955	1078.4	2249	171.5	9863053	54928	401401.8	11.3	-4.5	24.15
NY	3622315	East Islip CDP	14475	1225.6	4844	305.8	17648569	84641	698281.0	11.3	-4.6	24.15
NY	3622326	East Ithaca CDP	2231	371.2	1027	24.0	2434183	18215	104610.3	8.0	-9.9	29.49
NY	3622370	East Kingston CDP	276	159.3	149	7.5	550907	8869	24962.5	9.4	-9.7	24.15
NY	3622447	East Marion CDP	926	162.1	994	27.9	3274932	28068	99546.7	10.4	-5.7	24.15
NY	3622480	East Massapequa CDP	19069	2227.6	6793	542.6	27099256	83640	1113152.5	11.5	-4.2	24.15
NY	3622502	East Meadow CDP	38132	2524.6	12442	534.4	41654630	129806	1625477.4	11.5	-4.1	24.15
NY	3622546	East Moriches CDP	5249	316.0	2062	80.6	6633261	65380	196343.9	10.8	-4.9	24.15
NY	3622557	East Nassau village	587	34.0	299	2.4	844991	22264	40486.9	7.6	-11.6	24.15
NY	3622612	East Northport CDP	20217	1490.3	7074	605.6	30131135	115470	1318604.5	10.8	-5.2	24.15
NY	3622623	East Norwich CDP	2709	586.8	962	77.1	4147679	19566	100571.4	11.0	-4.9	24.15
NY	3622733	East Patchogue CDP	22469	848.6	8396	345.0	25896545	164479	996197.0	11.0	-4.9	24.15
NY	3622810	Eastport CDP	1831	137.0	765	28.1	2381062	53718	90462.9	10.7	-4.9	24.15

NY	3622832	East Quogue CDP	4757	199.7	2826	144.1	10652312	100662	398235.4	10.5	-5.0	24.15
NY	3622843	East Randolph village	620	140.0	198	7.1	581596	6512	29311.3	7.6	-10.2	26.80
NY	3622865	East Rochester village	6587	1588.1	2834	5.9	6784617	28346	208264.8	8.7	-8.9	20.92
NY	3622876	East Rockaway village	9818	3460.2	3803	137.6	9689697	26375	304547.8	11.8	-3.8	24.15
NY	3622980	East Shoreham CDP	6666	412.6	2018	102.3	7891363	72354	295701.7	10.7	-5.3	24.15
NY	3623052	East Syracuse village	3084	468.5	1552	181.4	4893464	25734	204569.7	8.4	-9.9	23.61
NY	3623217	East Williston village	2556	2448.7	851	63.0	3645863	12468	101342.2	11.5	-4.2	24.15
NY	3623404	Eden CDP	3516	226.2	1335	41.0	4490989	40594	206030.5	8.2	-9.4	24.89
NY	3623602	Edmeston CDP	657	46.3	309	5.5	831440	19781	43166.4	6.7	-12.0	23.86
NY	3623701	Eggertsville CDP	15019	2110.0	6649	359.5	22448291	68745	1087873.6	8.4	-8.6	27.12
NY	3623745	Elba village	676	173.8	281	5.1	725668	6653	34245.3	8.0	-9.5	21.39
NY	3623789	Elbridge village	1058	203.2	393	16.7	1226253	12660	59807.9	8.3	-9.4	23.60
NY	3623822	Elizabethtown CDP	754	81.3	383	13.1	1228332	22993	65613.3	6.3	-14.8	24.15
NY	3623965	Ellenville village	4135	155.0	1828	48.5	4231860	41183	209573.0	7.3	-10.7	27.27
NY	3624020	Ellicottville village	376	164.9	501	4.3	1243721	10189	55477.1	6.8	-11.5	24.85
NY	3624075	Ellisburg village	244	69.5	97	3.6	314214	6721	15877.3	7.4	-11.6	24.15
NY	3624141	Elma Center CDP	2571	142.6	1171	40.5	3863341	41306	102529.8	8.1	-9.3	31.56
NY	3624229	Elmira city	29200	1561.9	12442	569.0	33345794	156674	1660851.5	8.5	-9.8	29.49
NY	3624251	Elmira Heights village	4097	965.7	2060	42.7	4985889	26766	207181.6	8.4	-9.6	28.72
NY	3624273	Elmont CDP	33198	3953.1	10135	465.2	34178212	72199	1326569.1	11.8	-3.9	24.15
NY	3624295	Elmsford village	4664	1485.5	1846	104.6	4638043	23582	196678.2	10.8	-6.3	24.15
NY	3624405	Elwood CDP	11177	835.4	3620	334.8	16759974	85582	702785.1	10.9	-5.1	24.15
NY	3624515	Endicott village	13392	1285.2	7117	75.9	14195746	61976	630225.7	8.3	-9.7	23.39
NY	3624526	Endwell CDP	11446	1050.5	5490	64.8	14738109	78649	635034.3	8.1	-9.5	23.22
NY	3624625	Erin CDP	483	102.2	72	2.2	237057	10055	11821.2	7.5	-10.8	27.02
NY	3624713	Esperance village	345	167.9	221	2.4	603722	7069	28991.0	7.8	-11.9	23.94
NY	3624823	Evans Mills village	621	270.3	308	3.6	743865	7348	37361.6	6.9	-13.1	24.15
NY	3624867	Fabius village	352	109.2	180	2.5	492676	3744	24976.7	7.1	-11.1	25.70
NY	3624988	Fair Haven village	745	166.8	556	6.5	1581353	27951	72444.4	8.4	-9.2	20.16
NY	3625043	Fairmount CDP	10224	1043.3	4383	137.7	13762808	68650	630517.7	8.2	-9.9	22.31
NY	3625076	Fairport village	5353	1234.2	2484	85.1	7503627	33435	309958.0	8.6	-9.1	21.11
NY	3625109	Fairview CDP (Dutchess County)	5515	686.9	1820	110.4	6363761	50524	292147.0	9.4	-9.3	24.15
NY	3625120	Fairview CDP (Westchester County)	3099	1478.4	854	69.5	2516693	10584	98581.4	10.9	-6.2	24.15
NY	3625164	Falconer village	2420	588.9	1231	59.9	3685042	19212	106808.7	7.9	-9.6	26.03
NY	3625384	Farmingdale village	8189	2652.5	3296	233.0	9640795	28253	304454.1	11.4	-4.4	24.15
NY	3625417	Farmingville CDP	15481	1383.4	5053	237.7	18033014	89996	710490.0	10.8	-5.1	24.15
NY	3625428	Farnham village	382	87.1	110	2.9	346372	8005	15979.0	8.6	-8.6	26.91
NY	3625527	Fayetteville village	4373	819.9	2132	73.0	6402056	31182	312600.5	8.0	-10.4	24.89
NY	3625571	Felts Mills CDP	372	140.5	167	5.5	496361	5361	26068.8	6.7	-13.3	24.15
NY	3625747	Fillmore CDP	603	127.1	240	5.5	657020	6053	32758.7	7.6	-11.0	23.26
NY	3625857	Firthcliffe CDP	4949	734.7	2192	84.5	5946702	48215	191982.1	10.1	-8.2	24.15
NY	3625923	Fishers Island CDP	236	22.8	622	7.1	1884557	42812	75632.3	10.2	-6.2	24.15
NY	3625934	Fishers Landing CDP	89	60.6	86	1.3	275798	3453	13918.0	7.0	-12.9	24.15
NY	3625967	Fishkill village	2171	378.0	1089	47.0	2208597	13612	97433.3	9.9	-8.6	24.15
NY	3626121	Flanders CDP	4472	91.0	1721	135.5	7168010	64272	298404.1	10.5	-5.1	24.15
NY	3626209	Fleischmanns village	351	105.6	241	5.4	684987	11321	36561.3	6.4	-12.8	23.59
NY	3626264	Floral Park village	15863	3980.9	5895	222.3	17707736	36419	613962.1	11.7	-4.0	24.15
NY	3626319	Florida village	2833	338.2	1192	36.7	3594535	28668	96862.0	9.6	-8.9	24.15
NY	3626352	Flower Hill village	4665	1304.2	1597	115.0	6710395	32831	200617.2	11.4	-4.4	24.15
NY	3626462	Fonda village	795	443.6	362	10.2	801469	7183	39055.0	8.2	-11.4	25.27
NY	3626561	Forest Home CDP	572	322.3	386	6.2	543641	5002	26393.6	8.0	-9.9	29.86
NY	3626649	Forestville village	697	198.8	286	9.5	876320	9157	45437.6	8.2	-9.6	27.74
NY	3626704	Fort Ann village	484	400.7	182	3.3	511079	5288	24251.9	8.0	-12.9	24.15
NY	3626752	Fort Covington Hamlet CDP	1308	23.7	421	9.0	1295514	61235	68669.2	6.5	-14.3	24.15
NY	3626759	Fort Drum CDP	12955	326.2	3946	74.7	5988566	184112	268091.2	6.8	-13.2	24.15

NY	3626770	Fort Edward village	3375	536.4	1568	59.7	4425418	24649	197025.7	8.1	-12.6	24.15
NY	3626880	Fort Johnson village	490	156.2	245	10.8	789948	10173	40892.9	8.1	-11.5	25.85
NY	3626902	Fort Montgomery CDP	1571	385.5	290	12.8	1025404	20392	45060.9	10.3	-7.7	24.15
NY	3626924	Fort Plain village	2322	514.1	1007	29.6	2618661	22064	98965.4	8.1	-11.3	24.15
NY	3626946	Fort Salonga CDP	10008	479.1	3365	299.8	14873517	111961	589445.6	10.9	-5.3	24.15
NY	3627133	Fowlerville CDP	227	37.9	69	1.9	221978	5232	10488.2	8.5	-9.2	23.01
NY	3627188	Frankfort village	2598	987.3	1144	27.1	2837763	16887	101635.6	7.9	-11.5	23.46
NY	3627221	Franklin village	374	194.8	191	5.7	486698	2894	25609.8	6.9	-12.1	20.19
NY	3627309	Franklin Square CDP	29320	3782.6	10378	410.9	34471820	74060	1330090.2	11.7	-3.9	24.15
NY	3627331	Franklinville village	1740	438.8	795	19.9	2155649	13099	108409.8	6.5	-12.0	25.38
NY	3627419	Fredonia village	11230	681.5	4599	114.3	11168354	61066	424650.2	8.6	-8.4	29.66
NY	3627452	Freedom Plains CDP	421	98.9	313	6.9	661453	11149	29987.2	9.3	-9.4	24.15
NY	3627485	Freeport village	42860	3380.0	15070	600.6	41172977	118550	1520593.5	11.7	-3.9	24.15
NY	3627529	Freeville village	520	126.9	234	6.0	705351	10462	34831.3	7.8	-9.9	27.30
NY	3627672	Frewsburg CDP	1906	178.9	720	19.4	2174141	24054	103166.7	7.7	-10.0	27.06
NY	3627694	Friendship CDP	1218	126.5	567	11.2	1444468	33603	74720.7	6.8	-11.8	28.16
NY	3627815	Fulton city	11896	914.1	5644	275.3	15252145	81695	742517.2	8.1	-9.6	24.42
NY	3627859	Fultonville village	784	245.3	276	10.0	838343	8912	41595.6	8.1	-11.4	25.15
NY	3627969	Gainesville village	229	108.6	106	2.8	319388	3564	16555.1	6.8	-11.3	24.69
NY	3628035	Galeville CDP	4617	1273.2	2074	94.6	6329977	25115	207785.8	8.4	-9.7	22.48
NY	3628101	Galway village	200	95.9	55	0.6	159390	2094	7950.4	7.2	-12.3	27.28
NY	3628145	Gang Mills CDP	4185	238.1	1770	62.9	4517204	56457	199930.8	8.0	-10.2	25.21
NY	3628178	Garden City village	22371	2105.8	7606	313.5	25557690	114698	1004221.1	11.6	-4.1	24.15
NY	3628189	Garden City Park CDP	7806	2561.5	2546	192.4	10450664	25485	407607.6	11.6	-4.1	24.15
NY	3628200	Garden City South CDP	4024	3153.8	1375	56.4	4926174	10465	102608.7	11.7	-3.9	24.15
NY	3628244	Gardiner CDP	950	82.9	571	13.6	1444555	22778	63147.3	9.4	-9.0	23.89
NY	3628310	Gardnertown CDP	4373	403.0	1859	85.0	6485541	56398	291620.0	9.7	-8.4	24.15
NY	3628431	Gasport CDP	1248	158.1	415	12.5	1285208	24182	61812.4	8.4	-9.0	31.08
NY	3628453	Gates CDP	4910	736.3	1995	107.1	7537707	35106	315200.9	8.5	-9.0	20.24
NY	3628618	Geneseo village	8031	777.8	2219	67.7	5031666	33189	206199.6	8.2	-9.7	24.55
NY	3628640	Geneva city	13261	1183.5	5622	93.8	13031809	76034	519496.2	8.7	-8.8	34.34
NY	3628761	Germantown CDP	845	119.8	448	15.2	1373075	23328	62524.9	9.0	-10.4	24.15
NY	3628860	Ghent CDP	564	109.6	250	14.1	955405	12592	48116.3	8.3	-11.2	24.15
NY	3628959	Gilbertsville village	399	91.3	169	3.3	505941	8956	25601.9	7.2	-11.8	22.90
NY	3628990	Gilgo CDP	131	16.7	125	2.7	412007	14405	15482.1	11.5	-4.1	24.15
NY	3629014	Glasco CDP	2099	267.3	977	37.3	2592987	18382	97218.7	9.3	-9.9	23.64
NY	3629058	Glen Aubrey CDP	485	101.9	91	2.0	266179	6388	13071.1	7.6	-10.1	23.98
NY	3629113	Glen Cove city	26964	1292.4	10142	728.0	33127828	123984	1406751.4	11.3	-4.9	24.15
NY	3629245	Glen Head CDP	4697	931.5	1703	133.7	7011561	28758	200028.4	11.3	-4.8	24.15
NY	3629322	Glen Park village	502	103.3	182	4.1	517351	6531	25961.9	7.1	-12.4	24.15
NY	3629333	Glens Falls city	14700	1277.5	7312	490.0	21542544	80665	1214358.0	7.7	-12.8	24.15
NY	3629338	Glens Falls North CDP	8443	447.3	4227	218.4	11449407	96536	589641.4	7.6	-13.0	24.15
NY	3629421	Glenwood Landing CDP	3779	1265.5	1276	107.5	5477447	19558	201149.2	11.4	-4.6	24.15
NY	3629443	Gloversville city	15665	1070.1	7833	317.0	18888956	81687	948476.5	7.2	-12.1	26.85
NY	3629476	Golden's Bridge CDP	1630	211.2	711	39.0	2300219	24692	94798.7	10.0	-7.8	24.15
NY	3629509	Gordon Heights CDP	4042	545.8	1201	62.1	4382013	27832	100678.1	10.8	-5.1	24.15
NY	3629520	Gorham CDP	617	79.4	267	4.4	696302	13207	32684.3	8.1	-9.6	29.59
NY	3629542	Goshen village	5454	534.8	1927	74.8	4913763	51466	192211.7	9.7	-8.7	24.15
NY	3629597	Gouverneur village	3949	708.0	1904	63.6	5460614	32227	204837.6	6.5	-14.2	24.15
NY	3629630	Gowanda village	2709	514.1	1237	31.1	3250449	25057	101704.8	8.5	-9.6	24.68
NY	3629872	Grand View-on-Hudson village	285	637.2	144	5.9	476403	3101	19786.4	11.3	-6.0	24.15
NY	3629894	Grandyle Village CDP	4629	685.0	1872	58.2	6283438	38552	212239.3	8.4	-8.5	22.50
NY	3630026	Granville village	2543	526.1	1105	43.0	2956407	19818	98215.7	7.7	-13.2	24.15
NY	3630136	Great Bend CDP	843	40.3	323	12.4	1084447	25439	58439.3	6.5	-13.5	24.15
NY	3630169	Great Neck village	9989	2297.1	3883	246.3	13176826	32000	506275.9	11.7	-4.3	24.15
NY	3630191	Great Neck Estates	2761	2596.6	1073	68.1	4234308	17300	99720.9	11.7	-4.3	24.15

NY	3630202	Great Neck Gardens CDP	1186	2985.3	332	29.2	1538595	4409	66927.5	11.6	-4.3	24.15
NY	3630213	Great Neck Plaza village	6707	4710.2	4019	165.4	4383815	7326	102236.4	11.6	-4.3	24.15
NY	3630235	Great River CDP	1489	188.0	510	31.5	1995352	29362	78226.1	11.3	-4.6	24.15
NY	3630279	Greece CDP	14519	1208.0	6361	160.3	18493736	91533	833828.0	8.6	-9.0	19.74
NY	3630411	Greene village	1580	422.1	782	26.1	1905165	16924	98082.3	7.8	-10.5	19.96
NY	3630521	Green Island village	2620	1900.9	1296	7.8	2084545	12627	92994.9	8.9	-10.7	26.70
NY	3630543	Greenlawn CDP	13742	1274.3	4626	411.6	19412187	79432	808029.1	10.9	-5.2	24.15
NY	3630576	Greenport village	2197	783.5	1246	66.1	3459024	15178	102226.3	10.4	-5.7	24.15
NY	3630581	Greenport West CDP	2124	270.7	1623	63.9	5009673	44046	198349.3	10.5	-5.7	24.15
NY	3630598	Greenvale CDP	1094	1360.1	182	27.0	891881	6478	41341.2	11.3	-4.7	24.15
NY	3630609	Greenville CDP (Greene County)	688	48.9	410	12.0	1351615	16384	67039.3	7.7	-11.6	21.85
NY	3630642	Greenville CDP (Westchester County)	7116	1497.3	2284	159.6	8360781	54409	294030.3	10.9	-5.9	24.15
NY	3630675	Greenwich village	1777	281.3	817	21.3	2042416	14981	97504.0	7.9	-12.6	24.15
NY	3630752	Greenwood Lake village	3154	572.7	1442	40.9	4470116	28606	199585.3	9.2	-8.9	24.15
NY	3630807	Greigsville CDP	209	96.5	30	1.8	116577	3666	5842.5	8.3	-9.4	23.51
NY	3630961	Groton village	2363	465.1	835	26.9	2189484	18877	105640.9	7.6	-9.9	26.13
NY	3631022	Groveland Station CDP	281	75.9	107	2.4	334002	6054	15526.8	8.6	-9.5	24.59
NY	3631137	Guilford CDP	362	55.0	925	34.6	3300267	25566	20612.8	6.5	-11.8	21.96
NY	3631258	Hadley CDP	1009	199.1	541	3.1	1376742	20247	65085.6	7.2	-13.4	24.15
NY	3631291	Hagaman village	1292	239.3	539	28.4	1805684	13165	98724.5	7.4	-11.9	26.40
NY	3631445	Halesite CDP	2498	1143.9	1002	74.8	3981007	20500	99591.5	11.0	-5.2	24.15
NY	3631533	Hall CDP	216	62.6	72	1.5	231604	5858	10958.3	8.1	-9.4	29.09
NY	3631643	Hamburg village	9409	1143.7	4155	127.2	11838626	50947	534499.7	8.1	-9.3	27.48
NY	3631709	Hamilton village	4239	475.9	764	85.4	2916642	24922	105630.8	6.9	-12.0	26.33
NY	3631786	Hamlin CDP	5521	266.1	1577	31.6	4586725	48502	201050.6	8.4	-9.1	18.73
NY	3631852	Hammondsport village	661	339.4	377	5.5	958455	6734	44699.0	8.4	-10.5	27.85
NY	3631896	Hampton Bays CDP	13603	314.1	7818	412.2	29010670	202600	1215657.7	10.5	-5.0	24.15
NY	3631918	Hampton Manor CDP	2417	1172.6	1007	47.7	3406089	15387	100506.3	8.5	-11.0	26.43
NY	3631940	Hancock village	1031	271.3	737	15.7	1971771	22567	97159.1	7.8	-11.4	22.45
NY	3632017	Hannibal village	555	157.9	277	1.9	739435	10770	33965.7	8.3	-9.4	20.33
NY	3632094	Harbor Hills CDP	575	1603.6	185	14.2	805457	3091	34167.0	11.7	-4.3	24.15
NY	3632325	Harriman village	2424	397.4	1083	80.4	2421352	19634	96828.2	9.7	-8.5	24.15
NY	3632391	Harris Hill CDP	5508	459.2	2120	131.3	7760688	54126	315341.3	8.3	-8.8	29.07
NY	3632424	Harrisville village	628	213.9	297	8.3	915619	10141	51222.4	6.0	-14.7	24.15
NY	3632523	Hartsdale CDP	5293	1898.1	2944	118.7	4541615	16113	99733.0	10.9	-6.1	24.15
NY	3632578	Hartwick CDP	629	53.5	251	5.3	770469	19490	40856.5	6.5	-12.3	24.82
NY	3632710	Hastings-on-Hudson village	7849	1500.2	2979	176.0	8615094	44014	292477.0	11.2	-5.8	24.15
NY	3632732	Hauppauge CDP	20882	872.2	7302	441.2	25594018	179332	988980.7	11.1	-4.9	24.15
NY	3632754	Haverstraw village	11910	1175.8	3744	80.3	7338541	26148	296833.7	10.8	-6.8	24.15
NY	3632776	Haviland CDP	3634	356.4	1324	48.8	4404632	38343	194227.2	9.3	-9.5	24.15
NY	3632842	Hawthorne CDP	4586	1077.6	1607	84.9	6103994	27815	198348.6	10.5	-6.8	24.15
NY	3632963	Head of the Harbor village	1472	425.2	525	42.6	2319141	32976	95081.3	10.8	-5.1	24.15
NY	3633128	Hemlock CDP	557	62.9	140	9.0	387593	11332	20227.8	8.0	-10.1	30.00
NY	3633139	Hempstead village	53891	4965.2	17778	755.2	40935715	93530	1536264.5	11.6	-3.9	24.15
NY	3634044	Henderson CDP	224	29.8	111	3.3	318360	4299	16049.0	7.3	-11.7	24.15
NY	3634118	Heritage Hills CDP	3975	540.7	2669	73.5	6152878	23063	202289.7	9.8	-7.8	24.15
NY	3634121	Herkimer village	7743	1014.3	3439	68.1	7823277	46646	304474.8	7.9	-11.4	23.81
NY	3634198	Herricks CDP	4295	3391.7	1370	105.9	6041568	14821	204328.1	11.6	-4.1	24.15
NY	3634220	Herrings village	90	106.6	45	1.2	154417	2845	8663.9	6.5	-13.6	24.15
NY	3634286	Hewlett CDP	6819	1837.2	2744	95.6	7496223	22387	202605.4	11.8	-3.8	24.15
NY	3634297	Hewlett Bay Park village	404	846.4	189	5.7	646314	6483	24890.0	11.8	-3.7	24.15
NY	3634308	Hewlett Harbor village	1263	789.1	386	17.7	1459341	12037	50879.1	11.8	-3.7	24.15
NY	3634319	Hewlett Neck village	445	230.2	142	6.2	532035	4215	20969.5	11.8	-3.7	24.15

NY	3634374	Hicksville CDP	41547	2373.8	13936	1182.3	58931461	163162	2443677.8	11.3	-4.5	24.15
NY	3634451	High Falls CDP	627	143.8	424	8.9	1211312	14597	49168.9	9.4	-9.5	22.42
NY	3634484	Highland CDP	5647	383.0	2285	106.0	5769622	57920	193711.5	9.4	-9.1	24.15
NY	3634495	Highland Falls village	3900	837.2	1054	31.8	2514066	22609	94273.0	10.5	-8.0	24.15
NY	3634660	Hillburn village	951	301.7	329	8.4	972243	12595	42701.9	9.9	-7.7	24.15
NY	3634693	Hillcrest CDP	7558	2605.5	2141	66.6	6602931	31245	200519.1	10.2	-7.1	24.15
NY	3634786	Hillside CDP	877	375.8	310	23.7	1305822	11417	61969.6	9.1	-9.6	22.92
NY	3634803	Hillside Lake CDP	1084	464.6	235	16.7	951348	10641	45689.5	9.4	-9.2	24.15
NY	3634847	Hilton village	5886	1014.6	2213	32.5	5801774	32647	205607.8	8.6	-9.0	18.81
NY	3634979	Hobart village	441	135.3	225	6.7	585572	5791	31800.9	6.3	-12.9	23.63
NY	3635056	Holbrook CDP	27195	1412.9	9351	574.5	31185384	150883	1205643.2	11.0	-4.9	24.15
NY	3635111	Holland CDP	1206	104.9	431	9.2	1090289	20941	51568.5	7.3	-10.8	30.05
NY	3635144	Holland Patent village	458	157.8	216	3.5	552677	5126	27445.6	7.3	-12.4	25.80
NY	3635155	Holley village	1811	406.1	1000	9.9	2300612	12924	104420.0	8.2	-9.3	20.42
NY	3635254	Holtsville CDP	19714	957.2	6755	416.5	22497538	148335	892570.2	11.0	-5.0	24.15
NY	3635276	Homer village	3291	649.7	1377	44.1	4236135	29707	212254.0	7.6	-10.0	26.74
NY	3635353	Honeoye CDP	579	173.4	227	4.1	538413	8774	25228.3	8.2	-10.0	29.26
NY	3635364	Honeoye Falls village	2674	341.4	1228	52.7	3299961	19380	103687.5	8.5	-9.2	24.21
NY	3635474	Hoosick Falls village	3501	594.2	1365	51.6	3815809	26268	98525.4	7.9	-12.4	24.15
NY	3635573	Hopewell Junction CDP	376	292.4	184	5.8	650991	4397	29214.4	9.6	-8.9	24.15
NY	3635672	Hornell city	8563	1083.8	4306	227.0	12630354	56749	640094.1	7.6	-10.6	24.26
NY	3635694	Horseheads village	6461	581.2	3189	67.4	8448559	57365	306965.1	8.3	-9.8	28.20
NY	3635710	Horseheads North CDP	2843	363.7	997	29.6	3000378	27728	100531.7	8.2	-10.0	28.11
NY	3635738	Hortonville CDP	218	57.7	161	3.7	414658	6140	20536.4	7.7	-11.4	24.52
NY	3635771	Houghton CDP	1693	223.0	315	15.5	953699	14981	50899.9	7.3	-11.0	26.37
NY	3635969	Hudson city	6713	1131.7	3485	270.0	9028396	32750	399552.9	9.0	-10.6	24.15
NY	3635980	Hudson Falls village	7281	1260.5	3368	44.4	7889301	40081	298122.3	7.8	-12.7	24.15
NY	3636156	Hunt CDP	78	31.0	21	0.7	72693	2000	3723.2	7.3	-11.4	22.55
NY	3636167	Hunter village	502	74.6	819	8.7	1980408	21633	102740.6	6.4	-12.5	19.64
NY	3636233	Huntington CDP	18046	1025.2	7386	540.5	29314085	144326	1201820.8	10.9	-5.2	24.15
NY	3637044	Huntington Station CDP	33029	2063.8	10594	989.3	45445232	130937	1931986.2	11.0	-5.1	24.15
NY	3637132	Hurley CDP	3458	252.4	1338	41.2	4682050	47030	193203.8	9.2	-9.6	22.80
NY	3637198	Hyde Park CDP	1908	483.9	914	25.6	2971912	18331	98196.4	9.4	-9.4	24.15
NY	3637275	Ilion village	8053	1024.9	3549	70.8	8592092	45862	405609.2	7.9	-11.9	23.32
NY	3637528	Interlaken village	602	204.6	275	5.8	780177	4936	36475.3	8.1	-9.3	27.25
NY	3637583	Inwood CDP	9792	2850.6	3275	137.2	8556791	29837	302583.4	11.9	-3.7	24.15
NY	3637737	Irondequoit CDP	51692	1254.7	22801	606.3	69343800	305747	3231929.0	8.7	-8.9	20.34
NY	3637803	Irvington village	6420	932.9	2537	144.0	6458227	45254	192211.0	11.1	-6.1	24.15
NY	3637840	Islandia village	3335	800.1	1188	70.5	4091131	38940	96851.1	11.1	-4.9	24.15
NY	3637869	Islip CDP	18689	1413.6	6419	394.8	22203563	105949	898662.2	11.3	-4.6	24.15
NY	3638022	Islip Terrace CDP	5389	1548.7	1800	113.8	7135992	32938	200675.3	11.2	-4.6	24.15
NY	3638077	Ithaca city	30014	1726.5	11395	882.0	24880735	107182	1253331.0	8.6	-9.4	30.55
NY	3638253	Jamesport CDP	1710	150.1	752	61.8	3193078	32894	99073.2	10.6	-5.2	24.15
NY	3638264	Jamestown city	31146	1358.3	14884	642.0	38142848	179013	1951713.2	7.7	-9.6	24.72
NY	3638275	Jamestown West CDP	2408	397.6	1081	59.6	3637813	32122	105474.5	7.6	-9.8	26.13
NY	3638451	Jefferson Heights CDP	1094	330.8	489	24.1	1376741	18313	64991.1	9.0	-10.4	24.59
NY	3638500	Jefferson Valley-Yorktown CDP	14142	785.4	5626	372.2	19317937	117537	897128.0	9.8	-7.9	24.15
NY	3638506	Jeffersonville village	359	219.2	170	6.1	485030	5930	24567.6	7.7	-11.5	25.08
NY	3638539	Jericho CDP	13567	1500.2	4600	386.1	18006374	78859	706153.8	11.2	-4.5	24.15
NY	3638748	Johnson City village	15174	1369.2	7887	86.0	17142198	81475	737008.5	8.1	-9.7	23.57
NY	3638781	Johnstown city	8743	580.9	3982	286.0	35957691	125871	618731.4	7.5	-11.8	26.23
NY	3638825	Jordan village	1368	320.8	510	21.6	1524876	14360	69783.6	8.4	-9.3	23.82
NY	3638934	Kaser village	4724	4642.0	862	41.7	1221695	3276	53040.6	10.0	-7.5	24.15
NY	3638946	Katonah CDP	1679	949.8	519	69.2	2573181	15675	96581.4	10.2	-7.6	24.15
NY	3639089	Keeseville village	1815	482.4	744	11.0	2010048	18027	100519.1	6.6	-14.0	24.15

NY	3639232	Kenmore village	15423	3969.4	7072	205.7	18379617	36743	872090.6	8.4	-8.6	24.91
NY	3639243	Kennedy CDP	465	63.1	218	4.7	630985	11980	30514.8	7.7	-10.0	25.13
NY	3639309	Kensington village	1161	4913.1	489	28.6	1590320	6227	66173.9	11.6	-4.3	24.15
NY	3639397	Kerhonkson CDP	1684	115.0	695	23.5	2244224	41554	91351.4	9.2	-9.5	27.61
NY	3639463	Keuka Park CDP	1137	244.8	178	7.8	484478	8957	23027.1	8.4	-9.7	27.07
NY	3639562	Kinderhook village	1211	181.4	598	25.5	2155448	16537	97696.9	8.6	-11.0	24.15
NY	3639672	Kings Park CDP	17282	1161.3	6063	500.0	23693053	118751	1006249.5	10.9	-5.2	24.15
NY	3639694	Kings Point village	5005	953.6	1256	123.4	6024528	50903	193678.6	11.7	-4.3	24.15
NY	3639727	Kingston city	23893	1059.3	10996	892.0	32673139	133501	1709078.9	9.3	-9.7	23.04
NY	3639853	Kiryas Joel village	20175	3526.9	3649	107.4	4412697	19750	100842.4	9.4	-8.5	24.15
NY	3640175	Kysorville CDP	110	29.6	41	0.9	136408	7316	6343.6	8.6	-9.1	24.78
NY	3640189	Lackawanna city	18141	990.1	9082	264.0	20775960	82506	965609.8	8.5	-8.7	26.79
NY	3640200	Lacona village	582	176.8	354	2.0	936559	9188	45982.9	7.1	-11.8	24.15
NY	3640233	La Fargeville CDP	608	43.2	219	9.0	612570	14724	32055.1	6.9	-12.9	24.15
NY	3640398	Lake Carmel CDP	8282	662.9	3192	67.3	10001080	82104	396407.5	9.1	-8.9	24.15
NY	3640486	Lake Erie Beach CDP	3872	326.0	2020	41.7	6654642	57177	310017.7	8.6	-8.6	26.85
NY	3640508	Lake George village	906	362.0	720	27.6	2093083	14601	99249.4	7.5	-13.5	24.15
NY	3640530	Lake Grove village	11163	1433.5	3862	171.4	13067188	65879	503524.6	10.9	-5.1	24.15
NY	3640585	Lake Katrine CDP	2397	312.1	696	64.9	2386666	28535	95455.4	9.1	-9.9	23.40
NY	3640607	Lakeland CDP	2786	537.4	1101	25.8	3358459	20265	103490.5	8.4	-9.6	22.91
NY	3640648	Lake Luzerne CDP	1227	176.1	602	37.4	2388181	33301	97449.6	7.2	-13.5	24.15
NY	3640689	Lake Mohegan CDP	6010	710.8	2290	158.2	7713835	45063	298904.9	9.8	-7.8	24.15
NY	3640761	Lake Placid village	2521	594.3	2049	98.3	5306642	26796	222486.3	4.5	-15.8	24.15
NY	3640838	Lake Ronkonkoma CDP	20155	1462.0	7226	309.4	23277058	110245	908729.4	11.0	-5.0	24.15
NY	3640937	Lake Success village	2934	985.4	815	72.3	3774642	31012	98238.6	11.5	-4.2	24.15
NY	3641003	Lakeview CDP	5615	2137.4	1579	78.7	5909429	25437	201287.4	11.7	-3.8	24.15
NY	3641036	Lakeville CDP	756	316.1	168	12.3	616143	8589	32090.1	8.2	-9.8	27.57
NY	3641069	Lakewood village	3002	408.7	1552	83.5	4872896	38412	209382.4	7.9	-9.6	25.49
NY	3641135	Lancaster village	10352	1355.3	4731	81.6	12015494	52295	534610.7	8.3	-8.9	29.71
NY	3641223	Lansing village	3529	427.6	1694	26.0	2886232	51526	97548.7	8.0	-9.7	33.92
NY	3641333	Larchmont village	5864	1770.3	2143	41.7	5834112	26732	195438.9	11.4	-5.3	24.15
NY	3641432	Lattingtown village	1739	381.1	713	49.5	2968926	34452	94748.1	11.2	-5.1	24.15
NY	3641465	Laurel CDP	1394	157.6	935	41.9	3577625	27616	100195.9	10.6	-5.3	24.15
NY	3641487	Laurel Hollow village	1952	245.8	632	55.5	2865814	32984	95621.0	11.0	-5.1	24.15
NY	3641520	Laurens village	263	282.9	103	2.2	263472	1885	13380.7	7.2	-12.2	25.16
NY	3641553	Lawrence village	6483	1166.9	2312	90.8	6524760	40307	197569.7	11.8	-3.7	24.15
NY	3641784	Leeds CDP	377	159.8	144	8.3	491082	7010	25021.6	8.8	-10.5	24.36
NY	3641872	Leicester village	468	225.6	209	3.9	630531	6859	29337.3	8.5	-9.3	27.43
NY	3642026	Le Roy village	4391	614.7	1907	79.3	5116404	27446	213353.4	7.9	-9.6	26.06
NY	3642081	Levittown CDP	51881	2982.7	17258	727.0	61673261	171443	2449776.2	11.4	-4.3	24.15
NY	3642147	Lewiston village	2701	732.1	1298	39.4	3656971	25965	104971.7	8.6	-8.5	24.15
NY	3642224	Liberty village	4392	462.2	2160	112.0	5014907	39269	209768.6	7.1	-11.6	25.19
NY	3642323	Lima village	2139	417.3	832	18.0	2227714	15378	104174.4	8.2	-9.5	25.70
NY	3642345	Lime Lake CDP	867	174.5	527	9.9	1675424	24350	86801.6	6.5	-11.7	24.65
NY	3642378	Limestone village	389	66.5	131	4.5	378693	11254	19732.8	7.0	-11.5	24.91
NY	3642455	Lincolndale CDP	1521	425.1	492	28.1	1824154	17985	81562.9	9.8	-7.9	24.15
NY	3642488	Lincoln Park CDP	2366	633.7	1223	64.0	3127306	19218	98775.6	9.2	-9.7	23.16
NY	3642554	Lindenhurst village	27253	2746.1	9275	553.3	32642669	96725	1208492.1	11.5	-4.3	24.15
NY	3642609	Linwood CDP	74	18.7	1462	13.4	3062802	11845	7370.2	8.0	-9.7	27.04
NY	3642642	Lisle village	320	82.8	120	1.3	350229	6802	16678.3	7.8	-9.9	23.53
NY	3642741	Little Falls city	4946	456.4	2815	43.5	6052794	46746	202646.4	7.6	-11.7	24.68
NY	3642829	Little Valley village	1143	300.2	470	13.1	1307220	12192	68007.7	7.0	-11.2	25.99
NY	3642884	Liverpool village	2347	1066.1	1186	48.1	3442071	18949	102938.0	8.4	-9.7	22.56
NY	3642928	Livingston Manor CDP	1221	127.8	497	20.9	1305766	21753	68716.6	6.8	-12.1	26.67
NY	3642950	Livonia village	1409	369.1	721	22.9	1992030	11739	100243.5	7.8	-10.0	28.53
NY	3642972	Livonia Center CDP	421	141.6	180	6.8	649205	6813	32814.0	7.8	-9.9	29.25

NY	3643005	Lloyd Harbor village	3660	192.5	1230	109.6	5664152	72764	189001.8	11.0	-5.2	24.15
NY	3643082	Lockport city	21165	1049.2	10231	461.0	28436013	141222	1393580.7	8.4	-8.8	29.97
NY	3643192	Locust Valley CDP	3406	525.4	1269	96.9	5079224	18578	200876.2	11.2	-5.0	24.15
NY	3643214	Lodi village	291	112.7	146	2.8	462522	5413	22040.0	7.8	-10.0	28.71
NY	3643401	Long Lake CDP	547	15.6	745	15.9	2417039	60590	99115.9	4.5	-15.9	24.15
NY	3643511	Lorenz Park CDP	2053	342.6	905	36.9	2568138	16705	97192.0	8.9	-10.6	24.15
NY	3643533	Lorraine CDP	174	22.8	64	2.6	226746	3243	12281.6	6.3	-13.0	24.15
NY	3643720	Lowville village	3470	601.9	1625	46.1	4503393	27767	209377.3	6.2	-14.0	24.15
NY	3643874	Lynbrook village	19427	3723.1	7538	272.2	19981942	52051	711454.1	11.8	-3.8	24.15
NY	3643885	Lyncourt CDP	4250	1879.6	1963	87.1	6295020	24655	208145.4	8.3	-9.9	22.87
NY	3643918	Lyndonville village	838	243.2	341	4.6	951024	7854	43943.9	8.4	-9.0	33.20
NY	3643951	Lyon Mountain CDP	423	14.7	254	2.3	741654	27949	44729.5	3.7	-16.2	24.15
NY	3643962	Lyons village	3619	346.2	1761	58.3	5009670	38148	207515.3	8.7	-8.8	23.32
NY	3644006	Lyons Falls village	566	166.1	314	7.5	905736	10881	49221.4	6.3	-13.9	24.15
NY	3644149	Macedon village	1523	337.0	630	25.5	1915157	11828	86328.7	8.7	-8.9	21.68
NY	3644193	McGraw village	1053	258.2	501	27.6	1553551	9489	72915.4	7.5	-10.5	28.80
NY	3644226	Machias CDP	471	86.7	205	5.4	652323	8368	34442.2	6.6	-11.7	24.78
NY	3644424	Madison village	305	116.1	169	2.0	473594	2955	24374.3	6.7	-12.2	21.89
NY	3644534	Mahopac CDP	8369	598.2	3351	203.6	11283220	82979	496998.1	9.4	-8.3	24.15
NY	3644677	Malden-on-Hudson CDP	405	243.9	153	7.2	568095	8382	27029.4	9.2	-10.1	23.88
NY	3644710	Malone village	5911	621.1	2844	37.7	6713561	46558	312999.3	5.7	-15.0	24.15
NY	3644787	Malverne village	8514	3342.1	3161	119.3	11182401	26725	406930.9	11.8	-3.8	24.15
NY	3644792	Malverne Park Oaks CDP	505	2713.4	177	7.1	650968	3371	25548.5	11.8	-3.9	24.15
NY	3644831	Mamaroneck village	18929	1608.6	7488	134.7	16190464	71672	591236.6	11.3	-5.3	24.15
NY	3644853	Manchester village	1709	291.1	500	19.9	1721021	12963	85007.3	8.6	-9.0	25.69
NY	3644897	Manhasset CDP	8080	893.5	2940	199.2	10596751	37851	406072.7	11.4	-4.3	24.15
NY	3644908	Manhasset Hills CDP	3592	2546.6	1272	88.6	5216796	15071	203683.4	11.6	-4.1	24.15
NY	3645018	Manlius village	4704	720.0	2110	78.5	5374972	30228	207554.7	7.9	-10.6	25.43
NY	3645073	Mannsville village	354	125.1	146	5.2	468000	4360	24147.3	7.0	-11.9	24.15
NY	3645139	Manorville CDP	14314	189.1	5103	219.8	16006009	212644	673479.3	10.7	-5.0	24.15
NY	3645392	Marathon village	919	291.8	443	5.6	966798	12674	46125.1	7.8	-10.0	23.94
NY	3645480	Marcellus village	1813	843.4	730	26.0	1804563	9972	87641.0	8.1	-10.0	22.26
NY	3645557	Margaretville village	596	127.7	325	9.1	838888	9940	43826.9	6.9	-12.3	25.47
NY	3645573	Mariaville Lake CDP	722	45.2	345	8.6	1084914	27517	56754.0	6.7	-12.3	24.98
NY	3645634	Marion CDP	1511	167.5	756	8.5	1785380	19426	80958.6	8.6	-9.0	21.59
NY	3645700	Marlboro CDP	3669	281.7	1642	49.0	4817407	53161	189516.0	9.7	-8.6	24.15
NY	3645986	Massapequa CDP	21685	2152.5	7532	617.1	33231513	90654	1319958.4	11.5	-4.1	24.15
NY	3645997	Massapequa Park village	17008	2698.9	5681	484.0	24928624	57342	1019375.7	11.5	-4.2	24.15
NY	3646074	Mastic CDP	15481	1271.2	4817	237.7	18395329	89109	710909.8	10.9	-4.9	24.15
NY	3646085	Mastic Beach CDP	12930	802.3	4842	198.5	18043840	90006	709766.8	10.9	-4.8	24.15
NY	3646107	Matinecock village	810	133.1	307	23.0	1261552	21204	53802.7	11.1	-5.0	24.15
NY	3646140	Mattituck CDP	4219	199.9	2396	126.9	9473743	101256	393339.2	10.5	-5.3	24.15
NY	3646151	Mattydale CDP	6446	961.5	2805	132.1	8851510	36287	414430.7	8.4	-9.9	22.64
NY	3646162	Maybrook village	2958	392.0	1188	35.3	2634716	15858	98202.7	9.7	-8.6	24.15
NY	3646206	Mayfield village	832	231.4	349	9.8	1085835	8413	54013.3	7.1	-12.4	27.59
NY	3646239	Mayville village	1711	335.8	849	17.4	2284345	23789	104594.9	7.9	-9.2	25.74
NY	3646349	Mechanicstown CDP	6858	484.2	2898	163.2	6823612	46036	293943.8	9.6	-8.8	24.15
NY	3646360	Mechanicville city	5196	1606.6	2379	16.2	3858693	19415	98895.1	8.6	-11.3	27.30
NY	3646404	Medford CDP	24142	847.8	7996	370.6	27394157	181145	1098711.3	10.9	-5.0	24.15
NY	3646415	Medina village	6065	675.4	2445	33.2	5977614	47639	207393.9	8.3	-9.1	26.67
NY	3646503	Melrose Park CDP	2294	183.8	1002	20.2	3218667	31319	102847.0	8.1	-9.5	28.00
NY	3646514	Melville CDP	18985	427.8	6955	568.7	24808280	166644	990299.0	11.1	-4.7	24.15
NY	3646536	Menands village	3990	519.3	1852	115.8	4276024	37984	191786.2	8.8	-10.8	26.45
NY	3646646	Meridian village	309	132.8	101	2.7	309818	5005	14521.0	8.4	-9.2	19.08
NY	3646668	Merrick CDP	22097	1714.8	7372	309.7	26925500	88225	1012196.9	11.6	-4.0	24.15

NY	3646750	Merritt Park CDP	1256	25.7	209	27.2	758636	8834	38903.0	9.6	-8.7	24.15
NY	3646811	Mexico village	1624	261.7	779	16.6	1907707	22226	85206.9	7.8	-10.5	24.15
NY	3646866	Middleburgh village	1500	292.2	762	10.5	1901280	14384	83500.6	7.8	-12.0	22.07
NY	3646976	Middle Island CDP	10483	464.8	4358	160.9	10822950	86331	395019.2	10.8	-5.2	24.15
NY	3646998	Middleport village	1840	524.4	742	18.4	1948277	13243	88427.5	8.3	-9.1	28.68
NY	3647042	Middletown city	28086	1634.9	10763	648.0	28751901	107915	1410764.9	9.5	-8.9	24.15
NY	3647108	Middleville village	512	173.2	235	4.5	714324	7083	35768.6	7.3	-12.8	25.43
NY	3647229	Milford village	415	234.5	256	3.5	630383	3899	31732.1	7.0	-11.8	24.73
NY	3647273	Millbrook village	1452	253.5	840	15.1	1771931	26289	79464.6	8.5	-10.4	24.15
NY	3647306	Miller Place CDP	12339	617.2	4159	189.4	15202561	111238	598128.7	10.7	-5.3	24.15
NY	3647361	Millerton village	958	313.0	398	10.0	1123934	9768	52145.6	8.0	-11.0	24.15
NY	3647405	Mill Neck village	997	203.1	383	28.4	1633983	24926	63433.9	11.2	-5.0	24.15
NY	3647427	Millport village	312	150.5	122	1.4	352788	5429	16287.5	8.3	-10.2	26.92
NY	3647548	Milton CDP (Saratoga County)	3087	568.3	1271	20.3	3756096	24492	100573.4	7.8	-11.9	28.19
NY	3647554	Milton CDP (Ulster County)	1403	174.5	397	18.8	1340597	33458	59735.0	9.6	-8.8	24.15
NY	3647636	Mineola village	18799	2999.3	7686	463.5	22727897	48148	923410.3	11.5	-4.1	24.15
NY	3647680	Minetto CDP	1069	123.5	454	3.7	1261594	22808	58697.2	8.1	-9.6	24.15
NY	3647702	Mineville CDP	1269	143.0	476	22.1	1665076	29816	101041.9	5.5	-14.6	24.15
NY	3647757	Minoa village	3449	579.0	1462	57.6	4632980	20395	207942.0	8.2	-10.2	24.08
NY	3647823	Mohawk village	2731	725.5	1252	24.0	3202358	15787	101295.6	8.0	-11.8	23.34
NY	3647988	Monroe village	8364	755.0	2843	44.5	8000253	61421	295238.7	9.5	-8.5	24.15
NY	3648010	Monsey CDP	18412	3004.6	3174	162.3	8920339	49444	397753.8	10.0	-7.4	24.15
NY	3648054	Montauk CDP	3326	100.2	4557	108.9	12346102	162740	489683.7	10.2	-5.2	24.15
NY	3648090	Montebello village	4526	445.3	1512	39.9	4540161	53192	188506.7	10.1	-7.6	24.15
NY	3648142	Montgomery village	3814	721.4	1363	45.5	3926503	24100	98240.6	9.6	-8.7	24.15
NY	3648175	Monticello village	6726	502.0	3519	70.7	6122895	56357	204690.6	7.4	-11.2	24.18
NY	3648197	Montour Falls village	1711	218.8	586	28.2	1744542	29148	79916.7	8.8	-9.9	23.26
NY	3648208	Montrose CDP	2731	574.3	1089	34.4	3089715	20232	96434.8	10.7	-7.1	24.15
NY	3648241	Mooers CDP	442	120.7	294	2.7	728640	11321	37731.2	6.5	-14.3	24.15
NY	3648296	Moravia village	1282	278.3	452	11.3	1214626	12118	52507.3	8.1	-10.1	24.51
NY	3648450	Moriches CDP	2838	577.8	1496	43.6	3447720	25720	99716.8	10.9	-4.9	24.15
NY	3648483	Morris village	583	202.9	275	4.9	780327	9108	39472.3	7.1	-12.1	24.60
NY	3648538	Morrisonville CDP	1545	176.1	730	7.6	1922710	20824	99847.8	6.6	-13.9	24.15
NY	3648593	Morrisville village	2199	639.7	324	14.4	862679	13679	48097.1	6.5	-12.1	18.56
NY	3648750	Mountain Lodge Park CDP	1588	225.8	904	7.7	2833751	17525	103541.5	8.7	-8.6	24.15
NY	3648879	Mount Ivy CDP	6878	1297.5	2440	46.4	4383278	26459	98861.0	10.2	-7.4	24.15
NY	3648945	Mount Morris village	2986	460.9	1229	25.2	3268588	25108	102503.6	8.5	-9.2	25.64
NY	3649066	Mount Sinai CDP	12118	646.2	4037	186.0	14290016	102752	599201.5	10.8	-5.3	24.15
NY	3649121	Mount Vernon city	67292	5878.7	29584	1218.0	59255582	110962	2321230.0	11.4	-5.0	24.15
NY	3649220	Munnsville village	474	111.9	164	3.1	429199	5503	21462.0	7.4	-12.2	18.69
NY	3649231	Munsey Park village	2693	1761.8	789	66.4	3598240	13378	101682.1	11.4	-4.3	24.15
NY	3649242	Munsons Corners CDP	2728	202.2	1049	71.4	2997274	23235	105937.0	7.4	-10.3	25.21
NY	3649330	Muttontown village	3497	341.2	928	99.5	4462574	55937	190857.1	11.1	-4.8	24.15
NY	3649363	Myers Corner CDP	6790	531.4	2123	68.7	7589576	63233	290167.7	9.6	-8.8	24.15
NY	3649407	Nanuet CDP	17882	1052.2	6919	559.2	20925702	106508	890284.4	10.6	-6.7	24.15
NY	3649418	Napanoch CDP	1174	344.7	426	13.8	1472651	19509	64187.2	9.2	-10.2	26.92
NY	3649424	Napeague CDP	200	17.2	749	6.5	1573954	29222	62285.0	10.4	-5.1	24.15
NY	3649429	Naples village	1041	234.8	433	7.4	1102642	13799	51106.2	8.3	-10.2	24.71
NY	3649473	Narrowsburg CDP	431	77.4	271	7.4	883118	14059	42726.2	8.2	-11.0	24.74
NY	3649506	Nassau village	1133	327.3	542	4.6	1276846	8421	52282.8	8.2	-11.2	24.15
NY	3649605	Natural Bridge CDP	365	91.5	112	5.0	394942	10199	23880.0	6.1	-14.3	24.15
NY	3649726	Nedrow CDP	2244	607.2	941	19.3	3003138	14994	103927.5	8.3	-10.0	23.40
NY	3649748	Nelliston village	596	200.0	260	7.6	732205	9024	35880.4	8.1	-11.3	24.23
NY	3649781	Nelsonville village	628	326.8	263	14.9	828604	7298	36929.2	10.1	-8.2	24.15
NY	3649825	Nesconset CDP	13387	1369.3	4576	387.3	17735881	82409	705044.4	11.0	-5.0	24.15

NY	3649891	Newark village	9145	654.1	4076	51.2	9454495	72549	408837.5	8.7	-8.9	24.28
NY	3649902	Newark Valley village	997	324.2	426	6.7	1182950	10161	53581.5	8.0	-10.0	25.03
NY	3649946	New Berlin village	1028	303.4	393	11.8	1119829	11016	53597.4	7.1	-11.8	23.77
NY	3650034	Newburgh city	28866	2460.5	10830	679.0	24938911	80490	1099105.7	10.1	-8.1	24.15
NY	3650067	New Cassel CDP	14059	2748.9	3266	346.6	13390067	37234	509487.4	11.4	-4.3	24.15
NY	3650100	New City CDP	33559	868.8	11433	1049.4	49500644	260244	2264203.3	10.6	-6.9	24.15
NY	3650221	Newfane CDP	3822	221.8	1396	40.2	4237980	38151	207328.4	8.6	-8.6	24.15
NY	3650257	Newfield Hamlet CDP	759	93.1	215	6.5	729515	15109	37540.2	7.6	-10.1	27.39
NY	3650298	New Hartford village	1847	1177.9	884	51.6	2587097	13973	102802.1	7.7	-11.7	22.69
NY	3650353	New Hempstead village	5132	1212.0	1373	45.3	4805713	48240	193210.4	10.0	-7.4	24.15
NY	3650397	New Hyde Park village	9712	3845.2	3539	239.4	13219293	22233	511724.8	11.6	-4.0	24.15
NY	3650551	New Paltz village	6818	1098.3	1790	95.6	3934185	24531	97940.2	9.3	-9.2	22.13
NY	3650573	Newport village	640	268.9	250	5.6	525582	5501	26580.1	7.1	-12.9	26.01
NY	3650617	New Rochelle city	77062	2287.7	30136	1741.0	70242957	237659	2897992.2	11.3	-5.2	24.15
NY	3650705	New Square village	6944	4219.6	1227	61.2	1910677	7214	83954.1	10.2	-7.4	24.15
NY	3650727	New Suffolk CDP	349	283.6	253	10.5	915856	8860	38766.5	10.5	-5.3	24.15
NY	3650837	New Windsor CDP	8922	856.0	3584	188.4	11266798	67915	485412.2	10.2	-8.1	24.15
NY	3651000	New York city	8175133	8970.6	3337448	177399.0	##########	6618135	############	11.9	-4.2	24.15
NY	3651011	New York Mills village	3327	752.8	1961	60.2	4106891	21295	102397.4	7.8	-11.6	23.40
NY	3651055	Niagara Falls city	50193	1438.5	27095	853.0	70129585	288682	3340218.1	8.4	-8.4	21.93
NY	3651110	Nichols village	512	227.6	173	3.4	485926	7213	22498.5	8.3	-9.9	21.72
NY	3651275	Niskayuna CDP	4859	1454.5	1851	60.5	6124676	25944	305606.4	8.2	-11.2	25.63
NY	3651286	Nissequogue village	1749	185.6	605	50.6	2710608	40162	93996.5	10.9	-5.2	24.15
NY	3651297	Niverville CDP	1662	228.4	931	29.9	3208293	34201	96474.4	8.4	-11.1	24.15
NY	3651396	North Amityville CDP	17862	2511.4	5337	362.7	16480431	57852	602759.0	11.4	-4.3	24.15
NY	3651418	Northampton CDP	570	32.8	302	17.3	1103341	41016	42926.7	10.6	-5.0	24.15
NY	3651440	North Babylon CDP	17509	2057.9	6335	355.5	21728560	76512	804564.2	11.3	-4.5	24.15
NY	3651467	North Ballston Spa CDP	1338	680.7	363	8.8	1234474	13159	61396.5	8.0	-11.9	27.94
NY	3651495	North Bay Shore CDP	18944	1930.3	4913	400.2	19173727	75701	807516.1	11.2	-4.6	24.15
NY	3651517	North Bellmore CDP	19941	3029.9	6668	279.4	23245480	67354	913861.8	11.6	-4.1	24.15
NY	3651528	North Bellport CDP	11545	663.8	3746	177.2	12311739	89481	497086.2	11.0	-4.9	24.15
NY	3651583	North Boston CDP	2521	248.3	1071	22.2	3015595	37068	101412.9	7.8	-10.1	28.47
NY	3651792	North Collins village	1232	323.7	469	9.4	1235149	10586	53775.1	8.2	-9.4	25.81
NY	3651847	North Creek CDP	616	76.9	361	18.8	871321	19548	48926.3	6.0	-14.4	24.15
NY	3651915	Northeast Ithaca CDP	2641	370.0	966	28.4	2593150	18517	106420.5	7.8	-9.9	30.75
NY	3652040	North Gates CDP	9512	1276.4	4272	207.5	12231448	54737	525450.6	8.5	-9.0	20.06
NY	3652078	North Great River CDP	4001	610.5	1260	84.5	5184160	27299	199505.9	11.2	-4.7	24.15
NY	3652188	North Haven village	833	148.2	699	25.2	2529231	34947	96180.3	10.4	-5.4	24.15
NY	3653022	North Hills village	5075	1027.5	2378	125.1	6698103	49364	197845.0	11.4	-4.3	24.15
NY	3653055	North Hornell village	778	479.1	363	6.4	1106026	8063	54389.1	7.6	-10.8	24.87
NY	3653198	North Lindenhurst CDP	11652	2672.7	3907	236.6	12949891	47751	502172.0	11.4	-4.3	24.15
NY	3653231	North Lynbrook CDP	793	4208.2	296	11.1	994671	2145	38797.8	11.8	-3.8	24.15
NY	3653253	North Massapequa CDP	17886	2664.1	6402	509.0	27739511	69992	1118451.8	11.5	-4.2	24.15
NY	3653264	North Merrick CDP	12272	2589.1	3997	172.0	14518718	43481	507700.9	11.6	-4.0	24.15
NY	3653275	North New Hyde Park CDP	14899	3466.7	5026	367.3	21327157	46351	819436.5	11.6	-4.0	24.15
NY	3653319	North Patchogue CDP	7246	1432.7	2365	111.2	8829067	48535	300939.0	11.1	-4.9	24.15
NY	3653396	Northport village	7401	1319.1	2935	221.7	10764511	51626	400207.4	10.9	-5.3	24.15
NY	3653462	North Rose CDP	636	106.2	221	3.6	670921	10073	30779.4	8.5	-9.0	21.81
NY	3653561	North Sea CDP	4458	165.1	3316	135.1	12105412	126566	494300.1	10.4	-5.1	24.15
NY	3653660	North Syracuse village	6800	1140.1	3285	87.2	8655443	38772	416055.7	8.3	-9.9	22.40
NY	3653682	North Tonawanda city	31568	1215.0	14602	474.0	40847473	175190	1924501.8	8.5	-8.5	25.59
NY	3653748	North Valley Stream CDP	16628	3550.6	5238	233.0	18495547	47786	710158.2	11.8	-3.9	24.15
NY	3653770	Northville village	1099	333.9	696	6.7	1839642	15394	85149.7	6.9	-13.1	24.15

NY	3653775	Northville CDP	1340	58.4	726	48.4	2696821	36987	96627.0	10.6	-5.2	24.15
NY	3653792	North Wantagh CDP	11960	2528.7	4300	167.6	14980878	49454	508223.3	11.5	-4.1	24.15
NY	3653852	Northwest Harbor CDP	3317	107.1	3365	108.6	11908822	150447	488302.6	10.3	-5.3	24.15
NY	3653853	Northwest Ithaca CDP	1413	141.9	629	15.2	1377757	24975	67325.9	8.2	-9.2	31.80
NY	3653979	Norwich city	7190	1138.2	3627	227.6	10054207	38978	533370.4	7.3	-11.4	22.24
NY	3654012	Norwood village	1657	274.6	683	8.8	1809638	19464	95679.5	6.3	-14.6	24.15
NY	3654056	Noyack CDP	3568	131.3	3018	108.1	10877416	98065	401181.0	10.3	-5.4	24.15
NY	3654078	Nunda village	1377	391.0	556	11.6	1495360	12871	69069.6	8.0	-10.6	25.34
NY	3654100	Nyack village	6765	3626.3	3529	141.1	6267249	18425	199532.7	11.1	-6.1	24.15
NY	3654112	Oak Beach-Captree CDP	286	79.4	302	5.8	986124	17967	37150.3	11.4	-4.3	24.15
NY	3654144	Oakdale CDP	7974	826.3	3255	168.5	9938699	61720	395175.7	11.2	-4.7	24.15
NY	3654155	Oakfield village	1813	463.5	716	13.6	1931446	10063	89332.1	8.0	-9.4	23.53
NY	3654441	Oceanside CDP	32109	2201.7	11363	450.0	37475681	108949	1420849.0	11.7	-3.8	24.15
NY	3654452	Odessa village	591	152.9	273	9.7	785795	12575	40354.6	7.9	-10.3	25.72
NY	3654485	Ogdensburg city	11128	767.4	4775	216.0	14810353	89354	828601.6	6.4	-14.3	24.15
NY	3654540	Olcott CDP	1241	93.9	508	13.0	1667468	25263	68129.1	8.6	-8.6	24.15
NY	3654551	Old Bethpage CDP	5523	687.3	1918	157.2	7878809	38224	301940.1	11.2	-4.5	24.15
NY	3654562	Old Brookville village	2134	218.4	746	60.7	3305818	43117	94153.9	11.3	-4.8	24.15
NY	3654617	Old Field village	918	275.3	376	14.1	1373609	21548	57527.1	10.9	-5.2	24.15
NY	3654639	Old Forge CDP	756	72.0	686	6.6	1987002	22315	105141.2	4.5	-16.1	24.15
NY	3654705	Old Westbury village	4671	411.1	992	115.2	4921566	91961	184328.3	11.3	-4.4	24.15
NY	3654716	Olean city	14452	931.7	7523	456.0	23708938	109466	1299494.3	7.0	-11.5	28.14
NY	3654837	Oneida city	11393	193.5	5069	286.0	15926886	144940	810582.1	7.6	-11.1	21.15
NY	3654848	Oneida Castle village	625	322.3	246	8.2	631078	6256	30543.3	7.9	-11.0	19.78
NY	3654881	Oneonta city	13901	847.6	5277	390.0	14205568	63289	744924.2	7.1	-11.9	25.92
NY	3655002	Ontario CDP	2160	198.2	707	33.2	2129646	27440	98452.8	8.5	-9.2	20.48
NY	3655167	Orangeburg CDP	4568	515.6	1247	95.3	3981268	37117	96682.9	10.9	-6.0	24.15
NY	3655189	Orange Lake CDP	6982	399.4	2503	135.7	8707489	72128	392813.3	9.5	-8.5	24.15
NY	3655266	Orchard Park village	3246	639.9	1383	75.4	4188015	23870	212198.2	8.0	-9.6	25.38
NY	3655321	Orient CDP	743	37.4	729	22.4	2536673	46844	92631.8	10.4	-5.8	24.15
NY	3655365	Oriskany village	1400	427.3	653	25.3	2007335	12152	99927.9	7.8	-11.4	24.04
NY	3655376	Oriskany Falls village	732	308.3	318	5.6	747927	6162	37704.2	7.0	-12.0	19.03
NY	3655530	Ossining village	25060	2262.7	9179	92.0	17092340	68844	587741.4	10.8	-6.8	24.15
NY	3655574	Oswego city	18142	772.9	8177	445.0	25145600	123419	1281926.1	8.0	-9.7	24.15
NY	3655618	Otego village	1010	217.0	562	8.4	1558140	14057	69034.1	7.4	-11.7	22.52
NY	3655673	Otisville village	1068	310.4	485	5.9	1379202	11794	61637.1	8.9	-9.7	24.24
NY	3655816	Ovid village	602	241.0	224	5.8	560252	6231	26532.2	8.0	-9.7	27.01
NY	3655882	Owego village	3896	515.1	1684	30.4	3909337	39560	100858.7	8.2	-9.8	24.15
NY	3655937	Oxbow CDP	108	28.1	33	1.6	116616	2171	6221.3	6.8	-13.7	24.15
NY	3655948	Oxford village	1450	273.9	573	16.7	1617928	16046	81842.6	7.3	-11.3	20.96
NY	3655992	Oyster Bay CDP	6707	1535.9	2905	190.9	8221514	27175	301773.9	11.2	-5.0	24.15
NY	3656011	Oyster Bay Cove village	2197	310.5	763	62.5	3411054	42449	95152.0	11.0	-5.1	24.15
NY	3656088	Painted Post village	1809	560.3	850	27.2	2182119	19241	102822.8	7.9	-10.2	25.81
NY	3656110	Palatine Bridge village	737	412.7	333	9.4	836201	7038	40862.0	8.1	-11.3	24.16
NY	3656132	Palenville CDP	1037	125.3	599	22.8	1985527	21384	99484.3	8.1	-10.9	22.54
NY	3656187	Palmyra village	3536	606.0	1720	51.9	4083560	21316	103182.1	8.7	-8.9	22.23
NY	3656212	Pamelia Center CDP	264	49.1	47	3.9	198580	6357	10788.7	7.0	-12.6	24.15
NY	3656231	Panama village	479	79.1	183	4.9	549215	14499	26928.6	7.6	-9.9	25.39
NY	3656291	Parc CDP	254	165.5	22	7.4	175554	12941	11504.6	6.8	-13.6	24.15
NY	3656341	Parish village	450	94.6	205	1.5	532399	7546	25375.1	7.7	-10.8	24.15
NY	3656660	Patchogue village	11798	1828.6	5805	181.1	14301929	54251	505787.9	11.1	-4.9	24.15
NY	3656770	Paul Smiths CDP	671	464.0	15	4.6	103756	4566	7455.8	4.6	-15.9	24.15
NY	3656781	Pavilion CDP	646	61.4	238	4.8	677355	18791	32510.8	7.8	-10.0	25.20
NY	3656814	Pawling village	2347	376.4	969	44.4	2726543	26763	96281.0	9.2	-9.6	24.15
NY	3656869	Peach Lake CDP	1629	253.4	793	47.8	3215053	26096	98676.8	9.4	-8.4	24.15
NY	3656902	Pearl River CDP	15876	814.7	5321	331.2	18947102	115202	780559.1	10.9	-6.5	24.15

NY	3656968	Peconic CDP	683	95.5	374	20.6	1502487	26580	64265.2	10.5	-5.4	24.15
NY	3656979	Peekskill city	23583	1522.9	9499	483.0	20733642	85217	884550.6	10.5	-7.4	24.15
NY	3657177	Penn Yan village	5159	654.9	2483	35.6	5797791	39997	206162.4	8.3	-9.5	27.64
NY	3657243	Perry village	3673	529.7	1753	45.4	4406614	27236	216674.1	7.3	-10.4	23.34
NY	3657287	Perrysburg village	401	110.9	168	4.6	458728	5613	22697.3	7.7	-9.9	24.39
NY	3657364	Peru CDP	1591	277.0	625	15.6	2157685	19849	100514.7	6.7	-13.8	24.15
NY	3657518	Phelps village	1989	436.1	873	20.1	2195296	16563	100467.6	8.6	-8.9	28.48
NY	3657551	Philadelphia village	1252	417.7	568	18.4	1208640	10080	63531.2	6.7	-13.4	24.15
NY	3657639	Philmont village	1379	247.8	601	15.3	1339236	10871	66271.7	8.2	-11.2	24.15
NY	3657650	Phoenicia CDP	309	89.1	251	6.6	678402	8730	32496.5	8.0	-11.3	22.86
NY	3657661	Phoenix village	2382	613.6	1034	20.5	2472942	16480	103215.2	8.2	-9.8	25.95
NY	3657749	Piermont village	2510	836.3	1484	52.4	3378849	14850	98332.2	11.3	-5.8	24.15
NY	3657782	Pierrepont Manor CDP	228	54.8	63	3.4	238213	5427	12568.8	7.0	-12.1	24.15
NY	3657804	Piffard CDP	220	60.2	68	1.9	231139	5343	10879.2	8.6	-9.1	22.46
NY	3657815	Pike CDP	371	65.0	135	4.6	463622	7936	24215.9	6.8	-11.3	22.77
NY	3657980	Pine Bush CDP	1780	204.8	818	26.5	2103195	22375	95853.3	9.5	-9.0	24.14
NY	3658057	Pine Hill CDP	275	37.7	282	5.9	656036	20322	34177.5	6.5	-12.3	23.32
NY	3658145	Pine Plains CDP	1353	181.8	572	14.1	1763179	26234	78915.9	8.6	-10.6	24.15
NY	3658189	Pine Valley CDP	813	147.6	220	3.7	652094	11289	30569.0	8.2	-10.0	27.15
NY	3658354	Pittsford village	1355	880.2	616	31.2	2198634	11206	102596.7	8.7	-8.9	21.14
NY	3658409	Plainedge CDP	8817	2652.0	2978	250.9	12988276	35442	507407.1	11.4	-4.3	24.15
NY	3658442	Plainview CDP	26217	1726.8	9057	746.0	37964713	129541	1625180.5	11.2	-4.7	24.15
NY	3658475	Plandome village	1349	1523.6	410	33.3	1846424	9959	80027.0	11.6	-4.3	24.15
NY	3658486	Plandome Heights village	1005	1977.8	326	24.8	1415694	4481	52922.9	11.6	-4.3	24.15
NY	3658541	Plattekill CDP	1260	114.3	468	9.2	1143165	18851	48945.3	9.1	-9.1	24.15
NY	3658574	Plattsburgh city	19989	1127.9	8133	658.0	21752812	93771	1243111.1	6.8	-13.7	24.15
NY	3658601	Plattsburgh West CDP	1364	237.9	105	39.8	958684	22336	64517.4	6.6	-13.8	24.15
NY	3658684	Pleasant Valley CDP	1145	330.3	405	21.7	1007647	12530	49005.2	9.2	-9.6	24.15
NY	3658728	Pleasantville village	7019	1403.8	2796	129.9	7785014	38958	296819.6	10.4	-7.0	24.15
NY	3658739	Plessis CDP	164	42.4	21	2.4	98958	1505	5597.2	6.7	-13.2	24.15
NY	3658794	Poestenkill CDP	1061	68.1	361	4.3	1014610	28782	46421.8	7.7	-11.7	24.15
NY	3658937	Poland village	508	159.7	160	4.5	439636	4226	22673.4	7.0	-13.2	26.13
NY	3658992	Pomona village	3103	534.5	1138	20.9	3783202	36434	97370.1	10.0	-7.5	24.15
NY	3659157	Poquott village	953	730.5	414	14.6	1496429	8366	52395.6	10.9	-5.3	24.15
NY	3659212	Port Byron village	1290	402.6	373	11.3	1001533	15490	46531.6	8.6	-9.0	26.71
NY	3659245	Port Dickinson village	1641	760.1	653	9.7	1642705	10964	70992.4	8.1	-9.9	24.24
NY	3659311	Port Ewen CDP	3546	558.6	1438	39.9	4159986	33006	96442.6	9.4	-9.6	24.15
NY	3659322	Port Gibson CDP	453	175.9	153	5.3	540574	10054	26195.6	8.6	-8.9	23.50
NY	3659333	Port Henry village	1194	269.3	785	20.8	2331043	15223	99838.8	7.3	-13.5	24.15
NY	3659355	Port Jefferson village	7750	950.7	3081	119.0	8965697	62460	299908.0	10.7	-5.3	24.15
NY	3659377	Port Jefferson Station CDP	7838	1175.2	2919	120.3	9217549	52155	303281.9	10.7	-5.2	24.15
NY	3659388	Port Jervis city	8828	1290.7	3813	200.2	10361738	45492	495811.5	9.2	-10.0	24.15
NY	3659454	Port Leyden village	672	213.8	299	8.9	772222	8707	42565.0	6.3	-14.0	24.15
NY	3659498	Portville village	1014	411.3	457	11.6	1246977	9476	55173.3	7.1	-11.5	30.65
NY	3659520	Port Washington CDP	15846	1087.0	6135	390.7	20820776	70903	805756.9	11.5	-4.5	24.15
NY	3659531	Port Washington North village	3154	2186.5	1187	77.8	3660136	11372	99875.3	11.6	-4.7	24.15
NY	3659564	Potsdam village	9428	678.5	2329	49.9	4483641	45629	200539.0	6.2	-14.7	24.15
NY	3659619	Pottersville CDP	424	93.0	123	12.9	391273	19612	22498.7	6.4	-14.2	24.15
NY	3659641	Poughkeepsie city	32736	1989.9	15103	944.0	32855320	107885	1597911.3	9.6	-9.1	24.15
NY	3659708	Prattsburgh CDP	656	126.1	237	5.4	724955	16391	37022.7	7.2	-10.7	27.37
NY	3659740	Prattsville CDP	355	22.4	149	6.2	528468	17897	28349.7	6.5	-12.4	20.56
NY	3659831	Preston-Potter Hollow CDP	366	12.3	206	1.1	625954	43508	30840.7	7.1	-11.9	19.84
NY	3659883	Prospect village	291	160.9	136	2.2	392415	2926	21014.8	6.0	-13.9	24.15
NY	3659960	Pulaski village	2365	233.5	1052	52.5	2850554	25857	102949.5	7.6	-11.1	24.15
NY	3659993	Pultneyville CDP	698	108.4	358	9.2	1151866	12464	52338.8	8.6	-9.1	19.86

NY	3660103	Putnam Lake CDP	3844	518.0	1390	64.9	5016567	46060	193893.3	9.2	-9.1	24.15
NY	3660411	Quiogue CDP	816	165.7	640	24.7	2323224	18759	95362.8	10.6	-4.9	24.15
NY	3660422	Quogue village	967	80.9	1417	29.3	4708018	66891	95721.8	10.6	-4.9	24.15
NY	3660576	Randolph village	1286	141.4	621	14.7	1682730	25212	83481.2	7.6	-10.3	25.78
NY	3660598	Ransomville CDP	1419	95.5	620	15.3	1812934	27185	83184.2	8.7	-8.2	24.15
NY	3660609	Rapids CDP	1636	128.2	410	24.6	1575231	20471	79059.9	8.4	-8.8	29.05
NY	3660675	Ravena village	3268	702.2	1456	44.2	3791711	24829	98626.2	8.7	-10.9	25.36
NY	3660829	Red Creek village	532	172.4	227	3.0	596388	7313	27419.2	8.4	-9.2	21.48
NY	3660884	Redford CDP	477	67.8	139	2.9	405581	17053	22632.7	5.5	-14.9	24.15
NY	3660895	Red Hook village	1961	478.0	828	40.2	2620370	18138	97798.2	9.0	-10.2	24.15
NY	3660983	Red Oaks Mill CDP	3613	618.1	1373	72.3	5357095	36910	195456.9	9.6	-9.1	24.15
NY	3661016	Redwood CDP	605	87.3	171	8.9	643499	15056	34391.3	6.8	-13.3	24.15
NY	3661115	Remsen village	508	287.4	213	3.9	540233	5200	29036.7	6.0	-13.9	24.15
NY	3661142	Remsenburg-Speonk CDP	2642	248.3	1323	80.0	5193083	47570	197297.7	10.7	-4.9	24.15
NY	3661148	Rensselaer city	9392	840.4	4569	117.6	9481356	49833	394086.2	8.8	-10.9	26.51
NY	3661236	Retsof CDP	340	97.8	122	2.9	367607	3954	17370.4	8.4	-9.1	22.41
NY	3661346	Rhinebeck village	2657	558.4	1329	101.4	4268517	24585	197263.0	9.2	-9.9	24.15
NY	3661368	Rhinecliff CDP	425	45.2	228	16.2	858301	8579	43844.5	9.3	-9.6	24.15
NY	3661434	Richburg village	450	120.5	191	4.1	580249	7331	30601.9	6.6	-11.9	30.16
NY	3661489	Richfield Springs village	1264	373.7	497	10.6	1370443	13575	70794.0	6.5	-12.5	21.70
NY	3661588	Richmondville village	918	124.3	384	6.4	932804	16326	47962.9	6.8	-12.5	22.45
NY	3661665	Ridge CDP	13336	332.7	6215	204.7	18032708	130563	697709.9	10.8	-5.2	24.15
NY	3661797	Rifton CDP	456	102.6	297	5.1	963713	10535	43245.9	9.2	-9.6	24.15
NY	3661874	Ripley CDP	872	219.1	333	8.9	924863	18393	42055.4	8.8	-8.6	27.59
NY	3661973	Riverhead CDP	13299	286.9	5196	480.7	17530264	145614	700928.1	10.7	-5.1	24.15
NY	3662061	Riverside village	497	711.4	197	5.3	637532	7862	30392.5	8.0	-10.2	25.90
NY	3662066	Riverside CDP	2911	287.4	441	88.2	2902358	30990	97077.1	10.7	-5.1	24.15
NY	3663000	Rochester city	210565	2388.8	102466	4392.0	248438198	743857	11922437.3	8.6	-9.0	20.87
NY	3663132	Rock Hill CDP	1742	107.0	1199	18.3	3790793	51645	99742.4	7.5	-11.0	24.76
NY	3663264	Rockville Centre village	24023	3066.3	9313	336.6	24479926	78966	913651.2	11.7	-3.8	24.15
NY	3663319	Rocky Point CDP	14014	380.7	5221	215.2	18515174	104361	706793.1	10.7	-5.3	24.15
NY	3663330	Rodman CDP	153	24.4	48	2.3	158157	1928	8456.6	6.7	-12.8	24.15
NY	3663418	Rome city	33725	179.7	14789	621.0	39324323	401299	2014977.6	7.6	-11.4	25.50
NY	3663429	Romulus CDP	409	73.7	151	3.9	395916	5761	18336.8	8.4	-9.2	25.23
NY	3663473	Ronkonkoma CDP	19082	947.3	6694	403.1	23292608	129834	897770.9	11.1	-4.9	24.15
NY	3663506	Roosevelt CDP	16258	3459.3	4383	227.8	15717715	42150	609690.6	11.7	-4.0	24.15
NY	3663583	Roscoe CDP	541	141.8	236	9.3	720736	11714	38247.2	7.2	-12.2	26.13
NY	3663742	Rosendale Hamlet CDP	1349	296.4	718	19.1	1947250	22835	79383.3	9.4	-9.4	22.49
NY	3663770	Roslyn village	2770	1610.1	1258	68.3	2629616	13835	100288.9	11.4	-4.3	24.15
NY	3663792	Roslyn Estates village	1251	1642.1	396	30.8	1759280	11308	68635.0	11.3	-4.3	24.15
NY	3663803	Roslyn Harbor village	1051	955.3	404	25.9	1641247	15435	66051.9	11.3	-4.7	24.15
NY	3663814	Roslyn Heights CDP	6577	1440.1	2269	162.1	8986291	35825	302218.9	11.5	-4.4	24.15
NY	3663924	Rotterdam CDP	20652	1067.7	8994	323.8	28456111	134748	1312476.0	8.3	-11.1	25.04
NY	3663957	Round Lake village	623	236.8	217	7.5	751548	12324	36918.1	8.4	-11.5	27.18
NY	3663979	Rouses Point village	2209	468.1	1085	52.1	2958850	21651	100640.7	6.6	-14.3	24.15
NY	3664155	Rushford CDP	363	105.4	156	3.3	467853	6347	24168.1	6.9	-11.6	25.17
NY	3664199	Rushville village	677	220.5	266	4.7	751842	7197	35115.0	8.2	-9.8	25.90
NY	3664232	Russell Gardens village	945	2030.4	354	23.3	1083042	4494	44977.9	11.6	-4.3	24.15
NY	3664309	Rye city	15720	864.9	5842	434.0	20605946	102919	878947.9	11.2	-5.7	24.15
NY	3664408	Sackets Harbor village	1450	138.3	855	21.3	1934653	22784	97418.5	7.3	-11.9	24.15
NY	3664430	Saddle Rock village	830	1531.6	320	20.5	1279027	6897	51526.4	11.8	-4.3	24.15
NY	3664441	Saddle Rock Estates CDP	466	1965.0	161	11.5	685724	1795	28968.5	11.7	-4.3	24.15
NY	3664452	Sagaponack village	313	31.0	573	9.5	1859958	33895	74688.5	10.4	-5.1	24.15
NY	3664485	Sag Harbor village	2169	386.8	1958	71.0	6550755	40459	203480.0	10.4	-5.4	24.15
NY	3664551	St. Bonaventure CDP	2044	356.1	242	26.4	1013621	19426	58333.4	7.0	-11.5	31.91

NY	3664584	St. James CDP	13338	1038.8	4614	385.9	18975842	95211	805755.7	10.9	-5.1	24.15
NY	3664639	St. Johnsville village	1732	489.5	675	22.1	1870412	11128	85032.1	8.0	-11.4	24.82
NY	3664716	St. Regis Falls CDP	464	74.5	220	3.2	619885	11100	35102.8	5.0	-15.8	24.15
NY	3664749	Salamanca city	5815	320.0	2967	122.7	8312269	72115	425645.7	6.9	-11.3	26.73
NY	3664771	Salem village	946	110.8	455	11.3	1265382	16263	62521.7	7.6	-13.1	24.15
NY	3664842	Salisbury CDP	12093	2230.0	3959	169.5	14608896	44806	508435.3	11.5	-4.3	24.15
NY	3664859	Salisbury Mills CDP	536	209.3	130	9.2	443430	6940	20684.9	10.0	-8.3	24.15
NY	3664892	Salt Point CDP	190	75.7	80	3.6	304348	5223	14740.4	9.1	-9.9	24.15
NY	3664958	Sanborn CDP	1645	224.8	504	11.6	1424712	17537	67630.1	8.4	-8.6	24.79
NY	3665024	Sand Ridge CDP	849	151.6	206	7.3	747246	15246	35909.9	8.2	-10.0	24.31
NY	3665035	Sands Point village	2675	787.2	918	65.9	3957635	46718	94693.2	11.5	-4.7	24.15
NY	3665068	Sandy Creek village	771	173.9	290	2.6	728630	7758	35678.8	7.3	-11.7	24.15
NY	3665233	Saranac Lake village	5406	577.1	3326	203.0	9222253	45218	549417.4	4.7	-15.7	24.15
NY	3665255	Saratoga Springs city	26586	346.8	13268	913.0	40078957	293320	2094587.8	8.0	-12.0	28.56
NY	3665288	Saugerties village	3971	792.5	2095	70.6	4834163	26739	196151.9	9.2	-10.0	23.88
NY	3665310	Saugerties South CDP	2218	493.7	900	39.4	2935309	12536	99192.7	9.2	-10.0	23.76
NY	3665332	Savannah CDP	558	110.2	245	3.1	637484	12355	28966.4	8.6	-8.9	22.95
NY	3665354	Savona village	827	162.4	300	5.7	839535	14240	40906.2	7.8	-10.7	31.42
NY	3665409	Sayville CDP	16853	1208.3	5967	356.0	20242504	105305	798633.9	11.2	-4.7	24.15
NY	3665475	Schaghticoke village	592	255.3	253	3.9	624347	8660	28898.2	8.3	-11.7	28.21
NY	3665508	Schenectady city	66135	2128.8	31552	1144.0	71114020	237440	3583251.3	8.3	-11.1	25.68
NY	3665519	Schenevus CDP	551	127.6	144	4.6	480908	8854	25463.9	6.8	-12.6	23.85
NY	3665585	Schoharie village	922	199.1	459	6.5	1160334	12196	51202.1	7.8	-11.9	22.99
NY	3665640	Schroon Lake CDP	833	123.5	774	14.5	2314269	32085	97999.4	6.4	-14.4	24.15
NY	3665750	Schuylerville village	1386	460.7	658	20.0	1771914	10869	82134.5	8.3	-12.2	24.15
NY	3665761	Scio CDP	609	122.0	274	5.6	803737	11585	40924.1	7.1	-11.5	22.62
NY	3665882	Scotchtown CDP	9212	709.0	3563	219.3	9634859	64749	395559.8	9.4	-8.9	24.15
NY	3665893	Scotia village	7729	1612.1	3406	73.2	9104374	32753	404688.6	8.4	-11.1	25.64
NY	3665926	Scottsburg CDP	117	60.0	57	1.0	184954	2836	8887.2	7.9	-10.7	25.73
NY	3665948	Scotts Corners CDP	711	146.5	217	18.8	958706	15704	43011.9	9.9	-7.5	24.15
NY	3665959	Scottsville village	2001	419.6	848	1.8	2171453	16999	86124.5	8.6	-8.9	22.26
NY	3666047	Sea Cliff village	4995	1286.4	2036	142.1	7323193	24993	303957.6	11.3	-4.6	24.15
NY	3666058	Seaford CDP	15294	2182.5	5347	214.3	18868876	59947	711519.5	11.6	-4.0	24.15
NY	3666102	Searingtown CDP	4915	2621.1	1555	121.2	6909494	22578	202670.8	11.5	-4.3	24.15
NY	3666212	Selden CDP	19851	1725.9	6789	304.8	23199442	99482	913009.4	10.9	-5.2	24.15
NY	3666322	Seneca Falls village	6681	540.6	3024	64.0	7820375	55190	308182.7	8.7	-8.9	27.14
NY	3666366	Seneca Knolls CDP	2011	486.7	687	11.8	2207694	20080	100964.7	8.4	-9.5	24.41
NY	3666481	Setauket-East Setauket CDP	15477	714.8	5767	237.6	19700939	149801	792692.8	10.9	-5.2	24.15
NY	3666663	Sharon Springs village	558	100.4	261	3.9	675215	15226	35014.0	6.6	-12.2	22.97
NY	3666828	Shelter Island CDP	1333	63.1	1194	38.5	4166768	46126	97752.5	10.4	-5.6	24.15
NY	3666850	Shelter Island Heights CDP	1048	80.9	1739	30.3	5690311	75490	191865.4	10.4	-5.6	24.15
NY	3666872	Shenorock CDP	1898	726.4	739	35.1	2896524	16350	99916.6	9.7	-7.9	24.15
NY	3666883	Sherburne village	1367	290.4	632	15.8	1466680	12844	70263.7	7.1	-11.8	24.50
NY	3666949	Sherman village	730	162.0	259	7.4	694333	10265	33984.8	7.6	-9.9	26.43
NY	3666993	Sherrill city	3071	425.4	1368	23.6	3948080	27030	101524.5	7.8	-11.1	20.17
NY	3667048	Shinnecock Hills CDP	2188	288.2	1414	66.3	4976699	50592	197379.1	10.5	-5.1	24.15
NY	3667070	Shirley CDP	27854	919.0	8967	427.6	34305931	194020	1412678.9	10.9	-4.9	24.15
NY	3667081	Shokan CDP	1183	97.5	538	25.2	1872816	31600	92350.1	8.3	-10.3	23.03
NY	3667191	Shoreham village	531	829.5	256	8.2	905339	9158	37964.5	10.7	-5.3	24.15
NY	3667257	Shortsville village	1439	466.8	465	16.7	1440788	10226	70900.0	8.5	-9.1	25.82
NY	3667279	Shrub Oak CDP	2011	480.6	705	52.9	2527683	28223	95991.9	9.9	-7.9	24.15
NY	3667334	Sidney village	3900	486.5	1899	88.7	5507537	35416	209606.4	7.4	-11.5	22.72
NY	3667411	Silver Creek village	2656	663.4	1185	36.2	3726029	23550	105429.4	8.6	-8.6	28.66
NY	3667466	Silver Springs village	782	245.7	296	9.7	846138	9257	43085.3	7.2	-10.8	24.65
NY	3667488	Sinclairville village	588	123.3	234	6.0	656815	13008	32203.1	7.6	-10.2	24.01
NY	3667510	Skaneateles village	2450	612.6	1206	71.8	3971616	21637	106799.2	7.8	-9.8	24.66

NY	3667638	Sleepy Hollow village	9870	1645.0	3378	182.7	7229609	33313	290803.8	11.1	-6.4	24.15
NY	3667686	Sloan village	3661	1442.4	1880	64.2	5076417	15281	215449.7	8.5	-8.6	27.29
NY	3667708	Sloatsburg village	3039	388.6	1170	26.8	3707736	27879	96909.7	9.9	-8.1	24.15
NY	3667730	Smallwood CDP	580	77.7	1090	9.9	3370485	30631	100963.6	7.7	-11.1	24.62
NY	3667851	Smithtown CDP	26470	830.6	8539	765.8	36542516	197813	1601530.1	11.0	-5.0	24.15
NY	3668088	Smithville Flats CDP	351	68.9	115	4.0	396875	11144	19809.1	7.6	-10.6	21.31
NY	3668099	Smyrna village	213	118.1	67	2.5	199805	1808	10369.2	7.0	-11.6	24.31
NY	3668209	Sodus village	1819	502.2	828	25.9	2148640	13742	103707.3	8.5	-9.1	20.65
NY	3668242	Sodus Point village	900	270.3	782	12.8	2412416	17944	102208.3	8.6	-9.0	20.40
NY	3668286	Solvay village	6584	1528.2	3369	61.0	7385201	35218	313031.8	8.3	-9.7	22.39
NY	3668374	Sound Beach CDP	7612	1406.8	2930	116.9	10770109	40905	410532.3	10.7	-5.3	24.15
NY	3668462	Southampton village	3109	166.8	3062	94.2	9517879	95313	297480.2	10.5	-5.0	24.15
NY	3668610	South Blooming Grove village	3234	271.8	1458	15.6	3401297	33636	96928.7	9.4	-8.7	24.15
NY	3668847	South Corning village	1145	493.1	459	12.2	1360134	9117	53095.8	8.3	-10.2	26.39
NY	3668891	South Dayton village	620	195.9	297	7.1	887878	10488	43626.8	7.7	-9.8	26.00
NY	3668968	South Fallsburg CDP	2870	120.6	1240	45.8	3043329	40245	99232.8	7.7	-11.0	24.74
NY	3669001	South Farmingdale CDP	14486	2620.0	5003	412.2	21926003	55009	916912.9	11.4	-4.3	24.15
NY	3669023	South Floral Park village	1764	4277.1	548	24.7	1893222	2485	70544.3	11.7	-3.9	24.15
NY	3669078	South Glens Falls village	3518	779.8	1660	30.1	4070718	22468	198909.1	7.7	-12.7	24.15
NY	3669188	South Hempstead CDP	3243	3062.0	1077	45.4	3908343	12829	101361.6	11.7	-3.9	24.15
NY	3669199	South Hill CDP	6673	336.4	1050	71.8	3464341	42672	103395.9	7.7	-10.1	29.20
NY	3669254	South Huntington CDP	9422	1029.1	3449	282.2	14882806	65421	604463.4	11.0	-5.0	24.15
NY	3669364	South Lima CDP	240	50.0	63	2.0	218863	4616	10691.7	8.1	-9.8	27.23
NY	3669386	South Lockport CDP	8324	507.5	2412	125.3	6179646	63985	205185.4	8.4	-8.8	29.57
NY	3669441	South Nyack village	3510	1896.5	1096	73.2	3107867	13516	98446.8	11.2	-6.0	24.15
NY	3669452	Southold CDP	5748	203.6	4109	172.9	14669879	138095	594859.5	10.5	-5.5	24.15
NY	3669606	Southport CDP	7238	357.3	3244	54.8	9491123	75533	409132.7	8.3	-9.8	29.99
NY	3669892	South Valley Stream CDP	5962	2853.1	2044	83.5	6481797	17642	202860.7	11.8	-3.8	24.15
NY	3670035	Spackenkill CDP	4123	729.4	1504	82.5	5950360	34020	197043.6	9.6	-9.0	24.15
NY	3670068	Sparkill CDP	1565	1196.6	538	32.6	1897935	10553	81799.2	11.2	-5.9	24.15
NY	3670123	Speculator village	324	2.8	533	9.4	1670613	66008	93649.1	4.4	-15.2	24.15
NY	3670167	Spencer village	759	182.6	398	5.1	1069715	12849	50760.3	7.8	-10.6	29.28
NY	3670189	Spencerport village	3601	780.1	1572	45.7	4454470	24938	208394.1	8.4	-9.1	19.54
NY	3670387	Springs CDP	6592	207.9	4370	215.8	16853086	128604	709962.8	10.3	-5.3	24.15
NY	3670420	Spring Valley village	31347	3548.9	9573	276.4	15473609	46714	607505.7	10.2	-7.1	24.15
NY	3670442	Springville village	4296	381.4	1855	88.8	5286771	38685	213400.7	7.2	-10.7	25.00
NY	3670477	Springwater Hamlet CDP	549	98.8	180	4.6	601710	8896	29587.6	7.8	-11.0	26.50
NY	3670552	Staatsburg CDP	377	166.7	202	5.1	636399	12410	29504.7	9.4	-9.8	24.15
NY	3670618	Stamford village	1119	223.3	655	17.1	1642951	15491	89976.3	5.8	-13.1	24.05
NY	3670717	Stannards CDP	798	70.8	314	7.3	990755	18277	52003.8	6.7	-11.5	27.97
NY	3671267	Stewart Manor village	1896	3544.4	727	26.6	2233415	5301	85914.3	11.7	-4.0	24.15
NY	3671322	Stillwater village	1738	270.2	682	8.1	1715617	13750	79434.7	8.5	-11.6	27.89
NY	3671597	Stone Ridge CDP	1173	77.3	464	19.6	1709357	35230	81976.9	9.2	-9.4	23.21
NY	3671608	Stony Brook CDP	13740	985.2	4868	210.9	17513923	117957	697529.7	10.9	-5.2	24.15
NY	3671620	Stony Brook University CDP	9216	1432.0	106	141.5	2093037	19548	98803.7	10.8	-5.2	24.15
NY	3671663	Stony Point CDP	12147	791.7	4214	172.9	14701341	94940	587433.1	10.5	-7.2	24.15
NY	3671718	Stottville CDP	1375	149.2	682	24.7	1885106	21252	79615.3	8.9	-10.7	24.15
NY	3671817	Strykersville CDP	647	72.3	210	8.0	666566	12920	33581.6	7.5	-10.3	26.22
NY	3671894	Suffern village	10723	1921.8	4764	94.6	9332599	35650	298334.1	10.2	-7.6	24.15
NY	3672246	Sunset Bay CDP	660	203.6	451	9.0	1496776	9803	72079.6	8.6	-8.4	28.72
NY	3672327	SUNY Oswego CDP	3676	1668.7	7	22.1	276415	5113	18632.8	8.1	-9.6	24.15
NY	3672521	Sylvan Beach village	897	320.4	757	9.1	2093048	14192	100166.3	7.8	-11.1	22.82
NY	3672554	Syosset CDP	18829	1491.2	6336	535.8	27370414	104429	1115784.8	11.1	-4.8	24.15

NY	3673000	Syracuse city	145170	2166.3	66240	3158.0	153574849	536386	7753348.6	8.3	-9.9	23.52
NY	3673143	Tannersville village	539	97.0	582	9.4	1615864	14931	85944.4	6.1	-12.6	20.67
NY	3673154	Tappan CDP	6613	917.2	2128	138.0	8735610	53877	291838.2	11.2	-6.0	24.15
NY	3673176	Tarrytown village	11277	1112.0	4518	252.9	10150624	61786	385491.8	11.1	-6.3	24.15
NY	3673352	Terryville CDP	11849	1390.8	4025	181.9	13770528	73597	506131.3	10.8	-5.2	24.15
NY	3673517	Theresa village	863	167.5	391	12.7	1107121	11116	52841.7	6.9	-13.2	24.15
NY	3673583	Thiells CDP	5032	1193.0	1595	33.9	5096314	29664	198044.0	10.3	-7.2	24.15
NY	3673605	Thomaston village	2617	2322.9	1070	64.5	3266385	10241	101543.1	11.5	-4.3	24.15
NY	3673715	Thornwood CDP	3759	824.3	1185	69.6	4177429	24677	99135.2	10.4	-6.8	24.15
NY	3673726	Thousand Island Park CDP	31	41.5	153	0.5	462369	6134	22927.2	6.9	-12.9	24.15
NY	3673737	Three Mile Bay CDP	227	117.6	73	3.3	226103	2992	11727.9	7.1	-12.2	24.15
NY	3673880	Ticonderoga CDP	3382	268.2	1926	79.8	5704718	45023	298672.8	7.3	-13.4	24.15
NY	3673902	Tillson CDP	1586	261.0	580	22.4	2073557	23085	94933.4	9.4	-9.4	22.49
NY	3674017	Titusville CDP	811	378.1	207	13.2	869162	8507	42781.4	9.5	-9.1	24.15
NY	3674023	Tivoli village	1118	195.8	500	22.9	1489037	13857	65540.4	9.2	-10.2	24.15
NY	3674166	Tonawanda city	15130	1560.3	6992	316.0	21340881	81790	965541.8	8.5	-8.5	25.01
NY	3674183	Tonawanda CDP	58144	1532.6	26463	775.3	76625841	280111	3660520.2	8.4	-8.5	25.88
NY	3675121	Town Line CDP	2367	202.7	1138	28.6	3736060	30181	104772.3	8.1	-9.3	32.45
NY	3675341	Tribes Hill CDP	1003	145.1	486	12.8	1506882	19802	65811.9	8.1	-11.4	25.63
NY	3675484	Troy city	50129	1555.9	23473	854.0	45538230	200479	2304225.8	8.6	-11.1	27.26
NY	3675506	Trumansburg village	1797	308.9	759	19.7	1979132	21477	97586.7	8.0	-9.7	26.91
NY	3675572	Tuckahoe CDP	1373	163.5	991	41.6	3141691	45161	95745.4	10.5	-5.1	24.15
NY	3675583	Tuckahoe village	6486	3326.0	2847	139.1	5145992	15043	200600.6	11.2	-5.4	24.15
NY	3675627	Tully village	873	303.8	380	6.1	885523	7891	44584.0	7.3	-10.9	25.60
NY	3675671	Tupper Lake village	3667	396.5	1804	59.8	5106297	31231	217798.5	4.7	-15.7	24.15
NY	3675682	Turin village	232	75.6	106	3.1	326993	4987	18619.9	5.7	-14.2	24.15
NY	3675726	Tuscarora CDP	74	26.1	430	11.7	1235262	19849	6999.6	8.2	-10.3	24.89
NY	3675803	Tuxedo Park village	623	110.0	347	2.8	987151	40635	41828.3	9.6	-8.3	24.15
NY	3676001	Unadilla village	1128	277.3	588	9.4	1627174	12822	80583.3	7.4	-11.6	21.35
NY	3676089	Uniondale CDP	24759	3367.0	6520	347.0	23253031	64396	916425.5	11.6	-4.0	24.15
NY	3676155	Union Springs village	1197	215.0	407	10.5	1238206	17379	56772.0	8.7	-9.0	30.12
NY	3676210	Unionville village	612	193.0	160	2.8	448103	6551	19959.2	9.2	-9.4	24.15
NY	3676280	University at Buffalo CDP	6066	937.7	161	145.2	849731	19741	50735.9	8.5	-8.5	27.17
NY	3676287	University Gardens CDP	4226	2707.2	1689	104.2	4850093	12965	101384.0	11.6	-4.3	24.15
NY	3676331	Upper Brookville village	1698	301.6	578	48.3	2520748	38230	93292.1	11.1	-4.9	24.15
NY	3676386	Upper Nyack village	2063	1199.8	766	64.5	3268946	18494	96875.2	11.1	-6.3	24.15
NY	3676540	Utica city	62235	1335.8	28432	1183.0	67221627	317306	3584740.2	7.8	-11.8	24.05
NY	3676584	Vails Gate CDP	3369	1017.8	1546	71.1	2893453	17001	97875.2	10.0	-8.1	24.15
NY	3676617	Valatie village	1819	346.3	611	38.2	1978338	13985	98460.8	8.6	-11.0	24.15
NY	3676639	Valhalla CDP	3162	979.1	1214	58.5	4272264	20578	99133.0	10.6	-6.5	24.15
NY	3676661	Valley Cottage CDP	9107	871.0	3561	284.8	11785773	65332	490899.1	10.7	-6.6	24.15
NY	3676672	Valley Falls village	466	207.3	182	2.3	466320	6049	21912.0	8.2	-11.8	24.15
NY	3676705	Valley Stream village	37511	3683.1	12032	525.7	38429360	89164	1425263.7	11.8	-3.8	24.15
NY	3676881	Van Etten village	537	132.3	165	2.4	508619	11104	24540.0	7.7	-10.7	33.63
NY	3677112	Vernon village	1172	317.2	449	15.5	1221440	10598	53094.6	7.6	-11.4	20.95
NY	3677167	Verona CDP	852	128.1	354	6.3	1129451	19114	50111.5	7.7	-11.2	22.30
NY	3677211	Verplanck CDP	1729	565.9	344	21.8	882129	11609	38955.7	10.8	-7.0	24.15
NY	3677376	Victor village	2696	466.8	1094	111.5	4047242	18310	104644.8	8.5	-9.1	23.25
NY	3677431	Victory village	605	276.4	182	8.7	584223	8353	28633.4	8.2	-12.1	24.15
NY	3677513	Village Green CDP	3891	1013.5	2281	22.9	3926210	24935	103331.4	8.3	-9.5	25.42
NY	3677519	Village of the Branch village	1807	901.6	560	52.3	2511093	16321	98897.7	11.1	-5.0	24.15
NY	3677574	Viola CDP	6868	874.5	2006	60.6	5600830	41901	196886.0	9.9	-7.6	24.15
NY	3677684	Voorheesville village	2789	403.6	1152	38.9	3724582	24365	99269.1	8.3	-11.1	23.70
NY	3677772	Wading River CDP	7719	216.5	2982	279.0	13497549	98244	603803.3	10.7	-5.2	24.15

NY	3677783	Wadsworth CDP	190	83.9	81	1.6	244062	2506	11434.3	8.4	-9.3	23.64
NY	3677805	Wainscott CDP	650	39.1	700	21.3	2479664	55780	91352.5	10.4	-5.2	24.15
NY	3677849	Walden village	6978	972.7	2911	83.2	7426080	37912	297014.3	9.5	-8.8	24.15
NY	3677948	Walker Valley CDP	853	118.8	259	7.7	783098	17639	36527.1	8.9	-9.5	26.17
NY	3678003	Wallkill CDP	2288	218.4	909	20.5	2716308	31104	95114.9	9.5	-8.9	24.15
NY	3678036	Walton village	3088	546.1	1511	59.1	3849836	28528	201709.5	7.3	-12.4	20.90
NY	3678063	Walton Park CDP	2669	397.1	869	14.2	2755372	32586	96145.5	9.3	-8.7	24.15
NY	3678113	Wampsville village	543	213.3	184	10.3	623761	7260	32620.6	7.8	-11.1	18.77
NY	3678124	Wanakah CDP	3199	641.3	1491	43.2	5026941	22416	212423.1	8.4	-9.0	26.24
NY	3678146	Wantagh CDP	18871	1707.4	6191	264.4	22255383	83800	807885.9	11.6	-4.0	24.15
NY	3678168	Wappingers Falls village	5522	1260.4	2555	55.9	4493619	21649	196127.5	9.8	-8.8	24.15
NY	3678289	Warrensburg CDP	3103	111.7	1375	94.6	4481164	53476	200880.8	6.7	-13.9	24.15
NY	3678333	Warsaw village	3473	388.7	1689	89.6	5445586	32322	211203.5	7.6	-10.8	26.15
NY	3678355	Warwick village	6731	728.1	2996	87.3	7386084	42581	294635.1	9.5	-9.1	24.15
NY	3678421	Washington Heights CDP	1689	854.4	383	40.2	1699049	15503	82023.4	9.4	-9.0	24.15
NY	3678454	Washington Mills CDP	1183	453.7	532	33.1	1304424	10825	69517.6	7.5	-11.9	22.34
NY	3678465	Washingtonville village	5899	658.0	2019	28.4	5070545	37392	192963.8	9.9	-8.5	24.15
NY	3678487	Watchtower CDP	2381	160.8	31	21.4	210420	2518	11365.0	9.5	-9.0	24.16
NY	3678520	Waterford village	1990	2712.8	1050	20.9	2017928	8054	83193.1	8.8	-11.3	26.81
NY	3678553	Waterloo village	5171	754.7	2118	49.5	6104801	39722	206373.8	8.7	-8.8	25.99
NY	3678575	Water Mill CDP	1559	64.0	1869	47.2	6338918	100868	190454.8	10.4	-5.1	24.15
NY	3678608	Watertown city	27023	1055.6	12057	808.0	31651325	148915	1774215.5	7.0	-12.7	24.15
NY	3678663	Waterville village	1583	347.7	641	12.1	1664040	11413	86105.8	6.6	-12.5	19.52
NY	3678674	Watervliet city	10254	2643.0	5169	121.2	9050937	32644	397974.7	8.9	-10.8	26.56
NY	3678696	Watkins Glen village	1859	368.4	981	30.6	2613007	26508	98747.9	8.9	-9.4	22.24
NY	3678806	Waverly village	4444	676.7	2114	47.0	5540351	37523	206695.5	8.2	-9.8	24.85
NY	3678850	Wayland village	1865	455.1	804	15.4	2140582	14821	106339.7	7.3	-10.7	26.37
NY	3678960	Webster village	5399	810.9	2628	57.6	5626974	40145	204336.1	8.5	-9.2	20.25
NY	3678982	Websters Crossing CDP	69	29.5	27	0.6	89381	1190	4508.2	7.3	-10.2	26.66
NY	3679015	Weedsport village	1815	540.3	689	16.0	1760766	14180	81910.9	8.5	-9.2	27.37
NY	3679081	Wellsburg village	580	303.4	204	2.6	573883	7783	26523.3	8.3	-10.0	26.08
NY	3679092	Wellsville village	4679	593.3	2404	147.2	7434286	41551	321543.5	7.1	-11.4	27.48
NY	3679174	Wesley Hills village	5628	638.8	1586	49.6	5597993	56121	192442.6	10.0	-7.7	24.15
NY	3679246	West Babylon CDP	43213	2206.3	15013	877.4	50659494	171458	1913919.9	11.3	-4.4	24.15
NY	3679301	West Bay Shore CDP	4648	651.6	1784	98.2	6101121	34439	199006.3	11.3	-4.4	24.15
NY	3679444	Westbury village	15146	2529.8	5157	373.4	18371267	60516	710001.1	11.5	-4.3	24.15
NY	3679499	West Carthage village	2012	490.5	909	29.6	2379003	16081	103783.6	6.4	-13.6	24.15
NY	3679543	West Chazy CDP	529	92.6	197	3.2	568260	14950	29753.6	6.5	-14.2	24.15
NY	3679785	West Elmira CDP	4967	661.6	2098	46.6	6545703	46191	310105.8	8.2	-9.8	29.44
NY	3679796	West End CDP	1940	236.6	700	73.1	3112394	28459	105217.1	6.9	-11.9	24.84
NY	3679939	Westfield village	3224	313.8	1753	74.7	5717015	39463	208522.2	8.7	-8.4	27.30
NY	3680082	West Glens Falls CDP	7071	477.2	2195	182.9	8709349	69649	395022.4	7.6	-12.9	24.15
NY	3680170	Westhampton CDP	3079	99.0	2247	93.3	7419264	83068	292872.6	10.6	-4.9	24.15
NY	3680181	Westhampton Beach village	1721	218.2	2399	52.1	6569085	49034	201206.0	10.6	-4.9	24.15
NY	3680203	West Haverstraw village	10165	2380.2	3445	68.6	7826956	30106	298712.2	10.5	-7.1	24.15
NY	3680225	West Hempstead CDP	18862	2358.3	6038	264.3	21581022	59825	815066.7	11.7	-3.9	24.15
NY	3680258	West Hills CDP	5592	553.3	2036	167.5	9088066	63715	298097.4	11.0	-4.9	24.15
NY	3680291	West Hurley CDP	1939	189.2	978	23.1	2999909	41189	96055.4	8.5	-10.2	22.15
NY	3680302	West Islip CDP	28335	1735.1	9220	598.6	37209788	152450	1507841.1	11.4	-4.4	24.15
NY	3680423	Westmere CDP	7284	809.8	3270	159.4	8755377	57074	397195.0	8.5	-11.0	24.60
NY	3680522	Westmoreland CDP	427	92.0	139	3.3	371607	6568	18154.1	7.8	-11.3	22.72
NY	3680599	West Nyack CDP	3439	447.1	1163	107.5	5229369	42037	191715.4	10.9	-6.5	24.15
NY	3680632	Weston Mills CDP	1472	86.6	516	16.9	1633225	33716	83148.3	6.9	-11.5	27.45
NY	3680747	West Point CDP	6763	179.3	641	55.2	1488591	98932	61213.6	9.5	-8.1	24.15

NY	3680764	Westport CDP	518	82.9	331	9.0	952256	19240	48607.7	7.1	-13.7	24.15
NY	3680863	West Sand Lake CDP	2660	179.8	1108	28.4	3369447	47590	95733.7	8.0	-11.4	24.15
NY	3680885	West Sayville CDP	5011	901.2	2138	105.9	7796835	30517	302260.8	11.2	-4.7	24.15
NY	3680907	West Seneca CDP	44711	822.0	19128	794.0	59745367	277739	2987819.2	8.4	-8.9	28.45
NY	3681127	Westvale CDP	4963	1256.8	2100	46.0	7130303	31874	312530.1	8.3	-9.9	22.35
NY	3681138	West Valley CDP	518	81.8	205	5.9	617340	8992	32578.3	6.7	-11.6	23.16
NY	3681292	West Winfield village	826	241.1	411	7.3	1077424	8425	54300.1	6.8	-12.5	20.61
NY	3681419	Wheatley Heights CDP	5130	1538.1	1611	104.2	5945695	24813	200310.7	11.2	-4.6	24.15
NY	3681622	Whitehall village	2614	197.5	1312	31.4	3346231	36949	95729.2	7.7	-13.0	24.15
NY	3681677	White Plains city	56853	2004.0	24071	2705.0	60701310	184827	2704455.8	10.8	-6.0	24.15
NY	3681710	Whitesboro village	3772	1240.1	1874	68.2	4525138	24000	202743.2	7.9	-11.5	23.65
NY	3681831	Whitney Point village	964	285.4	342	3.9	842374	13735	39648.7	8.0	-9.9	22.78
NY	3682029	Williamson CDP	2495	188.5	966	32.7	2702533	29780	100130.5	8.5	-9.2	20.68
NY	3682084	Williamsville village	5300	1190.0	2554	126.9	7305619	28493	324317.6	8.4	-8.6	28.91
NY	3682117	Williston Park village	7287	3523.7	2784	179.7	9742038	15979	411362.2	11.5	-4.2	24.15
NY	3682260	Willsboro CDP	753	98.0	306	13.1	1023831	14600	57458.4	7.0	-13.6	24.15
NY	3682304	Wilmington CDP	937	33.9	515	16.3	1627469	49823	93707.6	5.5	-15.0	24.15
NY	3682359	Wilson village	1264	357.7	525	9.4	1409985	13232	64120.3	8.7	-8.4	24.15
NY	3682469	Windham CDP	367	51.0	442	6.4	1192952	23127	61839.7	6.4	-12.4	18.59
NY	3682524	Windsor village	916	237.7	435	5.6	1129651	14872	51362.7	7.9	-10.8	24.35
NY	3682656	Witherbee CDP	347	111.0	124	6.0	293046	5305	17417.0	5.7	-14.6	24.15
NY	3682678	Wolcott village	1701	281.3	574	9.5	1351555	20695	62279.2	8.5	-9.1	21.64
NY	3682744	Woodbury CDP	8907	731.8	3262	253.5	10411270	73554	396235.8	11.0	-4.9	24.15
NY	3682750	Woodbury village	10686	109.9	3762	368.3	14367905	234098	659343.8	9.3	-8.5	24.15
NY	3682942	Woodmere CDP	17121	2516.3	5450	239.9	18568341	57726	707450.2	11.8	-3.8	24.15
NY	3682953	Woodridge village	847	156.5	738	13.5	1965747	16519	97085.7	7.9	-10.8	25.19
NY	3682986	Woodsburgh village	778	445.0	308	10.9	812207	7106	31240.7	11.8	-3.7	24.15
NY	3683041	Woodstock CDP	2088	147.5	1510	75.3	5207406	56041	194476.4	8.4	-10.4	22.02
NY	3683063	Woodsville CDP	80	54.4	23	0.7	78908	4383	3715.7	8.6	-9.6	24.85
NY	3683118	Worcester CDP	1113	48.0	606	9.3	1616859	35249	82135.7	6.3	-12.6	23.40
NY	3683272	Wurtsboro village	1246	305.1	435	12.3	1245122	15396	56231.6	9.3	-9.6	25.24
NY	3683294	Wyandanch CDP	11647	1041.1	3282	236.5	12772307	71391	495084.6	11.3	-4.5	24.15
NY	3683349	Wynantskill CDP	3276	341.5	1421	47.7	4637817	34632	198717.8	8.3	-11.2	27.12
NY	3683371	Wyoming village	434	114.0	147	5.4	483190	4593	23729.6	7.9	-10.3	25.52
NY	3683426	Yaphank CDP	5945	150.4	1884	91.3	6270662	100527	187227.3	10.9	-5.0	24.15
NY	3684000	Yonkers city	195976	4395.3	79877	3147.0	146544151	423980	5909473.8	11.3	-5.4	24.15
NY	3684035	York Hamlet CDP	544	57.2	190	4.6	531335	12078	25379.4	8.2	-9.3	22.87
NY	3684044	Yorkshire CDP	1180	275.2	204	13.5	640657	17624	34844.6	7.1	-11.1	23.09
NY	3684088	Yorktown Heights CDP	1781	648.4	568	46.9	1980921	17349	96613.6	9.9	-7.7	24.15
NY	3684099	Yorkville village	2689	1409.6	1213	48.6	3391364	15707	102496.0	7.8	-11.5	23.46
NY	3684143	Youngstown village	1935	462.6	790	20.9	2330976	16233	104490.1	8.7	-8.2	24.15
NY	3684187	Zena CDP	1031	146.0	408	37.2	1875547	27837	94376.7	8.7	-10.2	22.20
PA	4200100	Aaronsburg CDP	613	143.3	298	6.3	966991	11841	43327.5	9.3	-8.7	20.94
PA	4200104	Aaronsburg CDP	259	262.2	186	2.9	476509	7516	19641.1	10.6	-7.4	22.14
PA	4200116	Abbottstown borough	1011	434.3	335	10.2	1053431	10264	42090.8	11.2	-6.6	24.15
PA	4200244	Ackermanville CDP	610	101.4	290	4.5	801655	9405	34614.4	9.7	-8.2	24.15
PA	4200332	Adamsburg borough	172	206.3	134	1.9	413285	3487	17751.9	9.8	-8.3	23.87
PA	4200364	Adamstown borough	1789	235.7	603	11.6	1609521	15311	65037.3	10.4	-7.4	24.15
PA	4200372	Adamsville CDP	67	25.0	42	0.7	134519	1741	6165.3	8.6	-9.4	24.63
PA	4200396	Addison borough	207	63.6	112	2.5	329926	6287	15523.8	8.5	-9.6	27.24
PA	4200540	Akron borough	3876	876.8	1818	25.1	4432914	25331	96853.6	10.8	-7.0	24.15
PA	4200572	Alba borough	157	85.3	56	2.2	202692	4631	10422.4	7.8	-10.0	26.03
PA	4200628	Albion borough	1516	530.1	648	8.8	1685772	15405	68975.0	8.7	-8.9	24.21
PA	4200652	Albrightsville CDP	202	44.2	106	2.3	353175	11236	17654.7	7.6	-10.4	24.57
PA	4200660	Alburtis borough	2361	396.9	848	19.6	2302017	14163	97474.3	10.3	-7.7	24.15
PA	4200676	Aldan borough	4152	2920.6	1787	17.0	4475430	14772	97098.0	12.3	-4.6	24.15
PA	4200756	Alexandria borough	346	407.3	176	3.2	464377	2738	19664.7	10.1	-7.5	23.17

PA	4200764	Alfarata CDP	149	79.5	52	1.6	175713	3492	7378.8	10.3	-8.3	21.32
PA	4200820	Aliquippa city	9438	822.1	5482	154.6	15010428	75912	596663.2	10.2	-7.8	23.41
PA	4200924	Alleghenyville CDP	1134	105.9	288	14.8	1104045	24689	45879.4	10.4	-7.2	24.15
PA	4200980	Allenport CDP	648	184.1	205	6.0	674766	10811	28468.9	10.5	-7.2	21.10
PA	4200988	Allenport borough	537	306.0	202	5.9	698810	13784	29782.7	10.7	-7.4	23.55
PA	4201004	Allensville CDP	503	64.1	164	5.5	545083	12814	23505.1	9.8	-7.9	20.25
PA	4202000	Allentown city	118032	2145.0	47719	2157.0	109592691	381710	4772184.1	10.5	-7.3	24.15
PA	4202016	Allenwood CDP	321	112.2	203	1.4	593121	6328	24697.4	9.9	-8.3	24.47
PA	4202040	Allison CDP	625	184.0	177	3.5	554804	8116	23142.0	10.5	-7.3	23.80
PA	4202056	Allison Park CDP	21552	598.8	8960	265.5	26649359	205135	1167687.8	9.8	-8.3	22.75
PA	4202072	Allport CDP	264	101.0	74	2.3	257290	5012	12748.1	7.9	-9.4	24.45
PA	4202088	Almedia CDP	1078	439.1	416	13.2	1391631	10095	62361.5	9.5	-8.7	20.19
PA	4202128	Alsace Manor CDP	478	188.0	194	6.2	661733	7501	29077.1	9.7	-7.8	24.15
PA	4202144	Altamont CDP	602	702.7	375	7.2	1066891	9513	50788.8	8.0	-9.4	21.12
PA	4202184	Altoona city	46320	1625.9	20956	1033.0	67862405	238834	3284119.8	9.4	-8.4	25.70
PA	4202264	Ambler borough	6417	2138.3	2950	203.8	8609717	20904	292978.4	11.6	-5.6	24.15
PA	4202288	Ambridge borough	7050	1752.9	3880	172.0	10150697	31876	396280.4	10.3	-7.8	22.66
PA	4202349	Amity Gardens CDP	3402	855.4	1300	44.3	3897245	25409	95134.8	10.9	-6.9	24.15
PA	4202416	Ancient Oaks CDP	6661	371.0	2506	78.1	7724452	45746	292012.8	10.4	-7.3	24.15
PA	4202608	Annville CDP	4767	956.0	1307	43.5	3263101	27415	95006.5	10.7	-7.2	24.15
PA	4202720	Apollo borough	1647	1184.3	723	21.8	2094222	8422	82777.9	9.6	-9.0	18.02
PA	4202752	Applewold borough	310	560.0	151	4.1	433438	1220	19873.2	9.5	-9.2	20.90
PA	4202832	Archbald borough	6984	183.0	2930	131.5	9693187	95562	410295.3	7.6	-10.9	23.11
PA	4202896	Ardmore CDP	12455	2411.8	5843	454.4	16139186	47336	689662.2	11.7	-5.2	24.15
PA	4202928	Arendtsville borough	952	291.1	305	9.6	943626	8120	38660.2	10.8	-6.7	24.15
PA	4202968	Aristes CDP	311	94.0	147	3.8	425640	5822	20803.4	7.8	-9.4	20.58
PA	4203008	Arlington Heights CDP	6333	550.7	2567	82.1	8313089	75496	292047.6	9.4	-8.7	24.15
PA	4203032	Armagh borough	122	56.0	25	1.2	88335	1198	4214.4	9.1	-8.7	25.38
PA	4203088	Arnold city	5157	3006.9	2958	59.0	8032893	17905	297398.4	10.0	-8.5	20.84
PA	4203096	Arnold City CDP	498	186.7	325	4.8	811381	5227	33247.5	10.5	-7.5	18.73
PA	4203104	Arnot CDP	332	55.2	141	5.1	491450	10842	25924.3	7.2	-10.5	26.51
PA	4203120	Arona borough	370	159.7	193	4.1	639246	6657	27510.2	10.0	-8.2	23.77
PA	4203264	Ashland borough	2817	703.0	1555	33.6	3394590	20105	102410.9	8.8	-8.9	20.92
PA	4203272	Ashley borough	2790	669.4	1259	34.1	3653251	16567	99424.3	9.0	-9.8	20.97
PA	4203296	Ashville borough	227	86.3	102	3.0	338285	3451	16749.7	8.3	-9.7	24.29
PA	4203312	Aspers CDP	350	129.7	127	3.5	364582	4524	14795.8	10.9	-6.9	24.15
PA	4203320	Aspinwall borough	2801	1510.8	1457	20.0	3145675	8961	97479.6	10.4	-8.0	21.61
PA	4203384	Atglen borough	1406	408.9	465	8.4	1271187	13338	48851.6	11.0	-6.7	24.15
PA	4203392	Athens borough	3367	486.8	1221	35.5	3040846	23392	99297.4	8.5	-10.0	23.81
PA	4203424	Atkinson Mills CDP	174	31.1	64	1.9	214945	8898	9013.8	10.2	-7.4	20.28
PA	4203440	Atlantic CDP	77	59.1	9	0.8	37694	2043	1916.0	8.5	-9.7	25.06
PA	4203464	Atlas CDP	809	1259.8	546	7.9	1250520	5419	53748.6	8.9	-9.0	20.52
PA	4203472	Atlasburg CDP	401	67.7	105	4.4	388376	5998	18035.7	9.7	-8.4	29.03
PA	4203480	Atwood borough	107	15.5	68	1.4	225751	11739	10613.9	8.8	-9.4	22.71
PA	4203488	Auburn borough	741	148.2	252	8.8	802744	11495	35310.8	9.9	-8.4	24.15
PA	4203544	Audubon CDP	8433	569.4	3172	136.6	8493745	75663	280537.6	11.4	-6.1	24.15
PA	4203576	Austin borough	562	58.1	232	9.2	789856	13368	41766.9	7.2	-10.8	27.79
PA	4203608	Avalon borough	4705	2732.1	2741	33.6	5384377	14857	198978.3	10.3	-7.6	21.82
PA	4203616	Avella CDP	804	151.8	344	8.9	1082949	14233	47830.4	10.0	-8.3	27.29
PA	4203632	Avis borough	1484	476.7	726	15.4	2055703	12643	82968.9	9.9	-8.4	25.40
PA	4203640	Avoca borough	2661	767.0	1156	32.5	3403859	18980	99876.6	9.0	-9.4	21.86
PA	4203648	Avon CDP	1667	313.9	733	15.3	2185341	20803	90667.3	10.4	-7.4	24.15
PA	4203656	Avondale borough	1265	371.6	427	7.5	1167803	7988	44843.6	11.6	-5.8	24.15
PA	4203676	Avonia CDP	1205	193.9	472	19.9	1613126	20523	66511.9	9.2	-8.3	19.42
PA	4203688	Avonmore borough	1011	129.6	437	11.3	1303512	14576	58025.5	9.7	-8.9	20.32
PA	4203736	Baden borough	4135	682.5	2065	31.9	5533036	33445	197024.4	10.1	-7.9	23.54
PA	4203768	Baidland CDP	1563	246.7	695	17.5	2321821	23842	94332.2	10.5	-7.5	29.28

PA	4203792	Baileyville CDP	201	36.6	84	4.0	317622	6958	14577.7	9.3	-8.5	22.17
PA	4203800	Bainbridge CDP	1355	169.0	526	8.8	1468259	22356	57155.0	11.3	-6.3	24.15
PA	4203816	Bairdford CDP	698	195.8	268	7.2	821704	15402	35913.7	9.7	-8.5	23.26
PA	4203864	Bakerstown CDP	1761	271.7	798	46.3	2540390	24115	97166.0	9.6	-8.6	22.87
PA	4203928	Baldwin borough	19767	1158.0	9122	116.9	24918797	107773	985732.8	10.1	-7.9	21.37
PA	4203984	Bally borough	1090	487.6	423	14.2	1283870	9480	50461.6	10.4	-7.3	24.15
PA	4204032	Bangor borough	5273	965.1	2272	89.4	6174112	27806	201353.9	9.5	-8.4	24.15
PA	4204136	Barkeyville borough	207	30.6	87	1.2	275504	12781	12757.5	8.5	-9.7	27.45
PA	4204344	Barrville CDP	160	47.3	72	1.8	236796	6558	10133.7	9.8	-7.8	18.85
PA	4204432	Bath borough	2693	855.7	1143	20.0	2652968	17897	97942.9	10.1	-7.6	24.15
PA	4204488	Baumstown CDP	422	189.5	259	5.2	739064	9836	30192.3	10.9	-6.8	24.15
PA	4204568	Beallsville borough	466	66.4	188	5.1	625309	13377	27387.4	10.1	-7.8	26.16
PA	4204599	Bear Creek Village borough	257	50.0	132	3.1	440852	15925	22424.2	7.3	-10.7	22.61
PA	4204608	Bear Lake borough	164	51.4	77	1.8	250246	5433	12578.9	7.5	-10.0	25.52
PA	4204616	Bear Rocks CDP	1048	136.7	648	8.9	2076435	40184	93971.8	8.6	-9.4	27.43
PA	4204688	Beaver borough	4531	1201.6	2179	35.0	5622745	24324	197909.6	10.2	-7.8	25.37
PA	4204768	Beaverdale CDP	1035	235.4	479	13.7	1560884	14889	69604.4	8.1	-9.8	24.30
PA	4204792	Beaver Falls city	8987	1584.1	4132	234.0	13003186	45578	601083.5	10.1	-8.0	28.43
PA	4204816	Beaver Meadows borough	869	591.7	416	9.8	1071353	5047	52824.1	7.8	-9.7	20.81
PA	4204824	Beaver Springs CDP	674	88.0	259	9.3	818618	15495	35126.5	10.2	-8.4	24.37
PA	4204848	Beavertown borough	965	190.4	489	13.3	1538273	11760	64311.0	10.1	-8.8	24.01
PA	4204896	Bechtelsville borough	942	484.1	345	12.3	961792	5948	40383.3	10.5	-7.2	24.15
PA	4204944	Bedford borough	2841	582.4	1509	36.2	3657774	24449	98219.5	10.0	-7.8	25.87
PA	4204984	Beech Creek borough	701	251.8	313	7.3	863712	7489	37364.0	9.9	-8.6	19.00
PA	4205028	Beech Mountain Lakes CDP	2022	180.5	1019	25.1	3524654	19403	104896.8	8.0	-9.9	20.89
PA	4205152	Belfast CDP	1257	332.8	326	7.7	937441	13700	60629.8	9.8	-7.9	24.15
PA	4205216	Bell Acres borough	1388	80.5	551	9.9	1768206	38879	74443.8	9.9	-8.0	22.61
PA	4205256	Bellefonte borough	6187	902.0	3071	159.5	8486892	38591	403980.3	9.7	-8.2	20.13
PA	4205288	Belle Vernon borough	1093	767.8	680	10.4	1505483	6011	60677.8	10.9	-7.3	22.41
PA	4205304	Belleville CDP	1827	223.9	64	3.3	164817	3687	94101.7	10.1	-7.9	19.32
PA	4205312	Bellevue borough	8370	2960.5	4966	129.3	10280274	25172	397887.3	10.3	-7.9	21.84
PA	4205384	Bellwood borough	1828	939.3	780	22.8	2423210	10712	101270.4	9.4	-8.6	25.98
PA	4205400	Belmont CDP	2784	579.2	1441	103.7	4697121	29903	204321.3	8.8	-9.2	24.94
PA	4205504	Ben Avon borough	1781	1473.9	806	12.7	2274005	9902	94128.6	10.5	-7.6	21.84
PA	4205520	Ben Avon Heights borough	371	1369.3	142	2.7	464485	4244	19857.4	10.0	-7.9	21.86
PA	4205536	Bendersville borough	641	234.5	220	6.5	673939	7736	27620.7	10.8	-6.8	24.15
PA	4205648	Benson borough	191	56.0	75	2.3	244761	2404	11490.2	8.8	-9.4	27.27
PA	4205672	Bentleyville borough	2581	241.5	1142	28.5	3050708	32125	94805.4	10.3	-7.7	27.19
PA	4205680	Benton borough	824	311.9	357	10.1	1070753	10158	49335.5	8.9	-9.3	21.18
PA	4205776	Berlin borough	2104	604.5	856	25.7	2479044	17603	105022.4	8.0	-9.7	25.23
PA	4205848	Bernville borough	955	316.3	386	12.5	1114246	7277	47039.5	10.4	-7.6	24.15
PA	4205856	Berrysburg borough	368	101.2	151	3.6	457454	7776	19787.2	10.1	-7.7	22.12
PA	4205888	Berwick borough	10477	1077.5	4553	251.4	14192542	70097	600339.1	9.5	-8.7	20.45
PA	4205904	Berwyn CDP	3631	566.2	1380	78.9	4256377	32962	95806.2	11.2	-5.9	24.15
PA	4205936	Bessemer borough	1111	154.2	503	5.9	1476034	14106	64717.3	9.3	-8.6	28.95
PA	4205976	Bethany borough	246	133.8	218	3.0	665667	6034	33104.0	7.3	-11.3	21.42
PA	4206000	Bethel CDP	499	126.3	184	6.5	656311	9542	28320.8	10.2	-7.9	24.15
PA	4206064	Bethel Park municipality	32313	1070.6	13512	720.0	44871667	222317	1989537.5	10.0	-7.9	23.20
PA	4206088	Bethlehem city	74982	1415.8	31347	1338.0	79203912	332737	3476956.6	10.4	-7.3	24.15
PA	4206171	Beurys Lake CDP	124	42.5	125	1.5	394284	6805	17952.5	8.6	-9.2	21.48
PA	4206236	Big Bass Lake CDP	1270	86.0	1093	14.7	3447977	51806	102326.6	6.8	-11.4	29.87
PA	4206240	Big Beaver borough	1970	80.8	821	15.2	2701997	115917	79943.6	9.6	-8.3	29.86
PA	4206280	Bigler CDP	398	108.7	147	3.5	464153	11704	23018.4	7.7	-10.0	26.03
PA	4206296	Biglerville borough	1200	468.1	513	12.1	1339553	12125	49402.6	10.9	-6.7	24.15

PA	4206344	Big Run borough	624	172.5	278	9.7	878062	7486	43589.1	8.4	-9.9	20.08
PA	4206490	Birchwood Lakes CDP	1386	251.7	872	14.3	2862082	34137	98061.5	8.2	-10.3	23.52
PA	4206496	Bird-in-Hand CDP	402	178.6	101	15.7	489932	5854	21080.6	11.1	-6.6	24.15
PA	4206504	Birdsboro borough	5163	1145.2	1882	65.2	5743922	30981	192478.3	10.9	-7.1	24.15
PA	4206560	Birmingham borough	90	66.0	36	0.8	117535	1623	5286.8	9.2	-8.3	24.28
PA	4206744	Black Lick CDP	1462	156.1	436	14.8	1296279	27069	58838.9	9.5	-9.1	24.00
PA	4206824	Blain borough	263	153.4	85	2.8	272243	2896	11693.9	10.4	-7.6	23.15
PA	4206904	Blairsville borough	3412	742.2	1856	34.5	4800073	29297	196166.1	9.7	-8.6	25.04
PA	4206928	Blakely borough	6564	902.4	3116	143.1	9579412	54745	416095.0	8.2	-10.0	22.20
PA	4206960	Blanchard CDP	740	143.1	207	7.6	715711	13568	31803.7	9.9	-8.4	19.08
PA	4206976	Blandburg CDP	402	98.1	109	5.3	386975	7473	21023.2	7.4	-10.3	24.11
PA	4206984	Blandon CDP	7152	393.6	2487	66.5	7616190	61186	288066.1	10.3	-7.7	24.15
PA	4207000	Blawnox borough	1432	641.9	879	10.2	1717191	6795	66215.7	10.3	-8.2	21.03
PA	4207040	Bloomfield borough	1247	350.3	486	13.4	1428475	9963	60675.2	10.4	-7.6	23.06
PA	4207120	Blooming Valley borough	337	60.2	147	3.5	477582	8559	22880.3	8.1	-9.8	26.52
PA	4207128	Bloomsburg town	14855	900.2	5128	353.0	13353927	65498	600557.6	9.5	-8.7	20.21
PA	4207160	Blossburg borough	1538	119.7	739	23.6	2147874	34792	100047.3	7.5	-10.5	26.48
PA	4207208	Blue Ball CDP	1031	180.6	275	15.3	882553	14289	35360.1	10.7	-7.1	24.15
PA	4207224	Blue Bell CDP	6067	423.6	2540	216.6	9673635	82065	375628.3	11.5	-5.7	24.15
PA	4207312	Blue Ridge Summit CDP	891	347.8	492	10.1	1206152	12294	50764.8	10.0	-7.1	24.15
PA	4207368	Boalsburg CDP	3722	183.8	1418	38.4	4365265	58612	191298.1	9.2	-8.6	20.04
PA	4207384	Bobtown CDP	757	205.2	411	9.4	1349558	8293	50352.4	10.7	-7.0	20.29
PA	4207472	Boiling Springs CDP	3225	352.9	1210	52.4	4400054	34235	192404.7	10.9	-6.7	24.15
PA	4207480	Bolivar borough	465	227.0	191	5.2	653885	4208	29011.7	9.8	-8.6	26.61
PA	4207560	Bonneauville borough	1800	341.5	704	18.2	1916750	11468	77048.0	11.0	-6.6	24.15
PA	4207616	Boothwyn CDP	4933	1371.1	1803	79.7	4993627	24877	190406.8	12.3	-4.6	24.15
PA	4207688	Boston CDP	545	529.5	201	6.0	660944	6827	28633.4	10.3	-7.8	19.39
PA	4207712	Boswell borough	1277	464.7	680	15.6	1783628	11661	85256.3	8.3	-9.6	30.40
PA	4207800	Bowers CDP	326	145.5	219	4.3	619217	6421	25975.1	10.3	-7.7	24.15
PA	4207880	Bowmanstown borough	937	318.5	446	10.6	1246066	13209	49728.3	9.9	-8.2	24.15
PA	4207896	Bowmansville CDP	2077	303.4	682	18.0	2165209	29244	88070.4	10.6	-7.2	24.15
PA	4207960	Boyertown borough	4055	1560.4	1952	52.9	4137208	18104	98572.8	10.6	-7.0	24.15
PA	4207976	Brackenridge borough	3260	2113.5	1457	23.3	4132475	14122	98297.1	10.0	-8.5	19.06
PA	4207992	Braddock borough	2159	1363.9	1358	15.4	3148181	14076	95861.5	10.5	-7.9	19.03
PA	4208008	Braddock Hills borough	1880	1387.2	1074	13.4	2459995	15626	97327.7	10.0	-7.9	18.67
PA	4208024	Bradenville CDP	545	361.7	184	4.6	595272	4935	26112.2	9.7	-9.0	24.88
PA	4208040	Bradford city	8770	741.9	4316	293.0	14549640	60488	873200.7	6.9	-11.6	24.37
PA	4208064	Bradford Woods borough	1171	442.9	469	8.4	1456625	17207	63667.6	9.6	-8.4	22.80
PA	4208208	Branchdale CDP	388	118.3	147	4.6	383529	5362	17175.6	9.3	-8.6	21.99
PA	4208240	Brandonville CDP	197	26.1	83	2.4	274156	7573	13062.5	8.3	-9.5	20.51
PA	4208312	Brave CDP	201	54.3	64	2.5	234969	4087	10342.5	10.4	-7.6	32.67
PA	4208392	Breinigsville CDP	4138	184.1	623	110.9	3391208	48211	93304.4	10.3	-7.3	24.15
PA	4208416	Brentwood borough	9643	2490.2	4851	113.4	13207268	36917	503686.0	10.0	-8.0	20.88
PA	4208432	Bressler CDP	1437	756.7	583	36.5	2199126	7593	83409.6	11.1	-6.2	24.15
PA	4208472	Briar Creek borough	660	161.7	169	8.1	545856	13201	25082.7	9.5	-8.8	20.39
PA	4208504	Brickerville CDP	1309	217.1	470	8.5	1450902	20684	59158.7	10.6	-7.2	24.15
PA	4208568	Bridgeport borough	4554	1889.3	2345	27.6	4405242	16359	96513.1	11.8	-5.6	24.15
PA	4208624	Bridgeville borough	5148	1393.9	2700	36.8	6814961	26773	196292.5	10.4	-7.8	22.38
PA	4208632	Bridgewater borough	704	805.1	370	5.4	838439	11355	35421.4	10.2	-7.8	26.18
PA	4208744	Brisbin borough	411	295.9	172	3.6	569633	10931	27761.2	7.9	-9.8	27.86
PA	4208760	Bristol borough	9726	1980.3	4516	215.0	10692350	35759	388155.1	11.7	-5.5	24.15
PA	4208819	Brittany Farms-The Highlands CDP	3695	834.8	1450	71.2	4179248	24816	97489.6	10.9	-6.2	24.15
PA	4208896	Broad Top City borough	452	150.6	135	4.2	450143	7818	21426.8	8.5	-8.5	23.13

PA	4208960	Brockway borough	2072	480.7	1008	32.2	2778538	22334	103985.8	7.9	-10.0	22.57
PA	4209000	Brodheadsville CDP	1800	143.3	764	24.8	2577873	44583	92930.3	9.2	-8.9	24.15
PA	4209080	Brookhaven borough	8006	1991.0	3592	116.5	9690827	38818	289017.6	12.3	-4.6	24.15
PA	4209224	Brookville borough	3924	476.0	1883	61.0	5381260	55458	201206.6	8.0	-10.1	19.49
PA	4209248	Broomall CDP	10789	1316.4	4364	246.9	15274325	69370	580228.6	11.8	-5.2	24.15
PA	4209400	Brownstown borough	744	799.1	345	9.9	1134651	4762	53199.6	9.1	-8.8	25.37
PA	4209416	Brownstown CDP	2816	362.5	704	41.6	2587354	32353	90644.7	11.0	-6.8	24.15
PA	4209432	Brownsville borough	2331	756.6	1388	22.2	3331436	21604	95970.0	10.6	-7.3	24.58
PA	4209496	Browntown CDP	1418	744.1	679	17.3	1964129	9998	86358.6	9.0	-8.9	21.04
PA	4209528	Bruin borough	524	64.1	212	5.8	700201	13138	33023.9	8.7	-9.7	18.82
PA	4209696	Bryn Athyn borough	1375	289.4	322	8.3	1071990	16904	41870.1	11.5	-5.7	24.15
PA	4209728	Bryn Mawr CDP	3779	2358.7	1386	137.9	3332730	14376	97384.2	11.5	-5.6	24.15
PA	4209792	Buckhorn CDP	318	66.3	96	3.9	346150	8044	15879.5	9.4	-8.7	20.23
PA	4209896	Buck Run CDP	176	81.7	67	2.1	187247	4004	8802.3	8.5	-8.8	21.67
PA	4210096	Buffington CDP	292	610.7	109	2.8	242724	1998	9971.0	10.5	-7.2	24.03
PA	4210128	Bulger CDP	407	70.9	236	4.5	758336	13119	33492.5	9.7	-8.3	28.13
PA	4210224	Burgettstown borough	1388	539.0	716	15.3	1966758	13276	82546.9	9.8	-8.3	28.84
PA	4210240	Burlington borough	156	66.8	85	2.2	266713	3614	12822.4	8.5	-9.9	25.62
PA	4210256	Burnham borough	2054	601.9	947	22.5	2505476	18173	96193.5	10.3	-7.8	19.46
PA	4210280	Burnside borough	234	61.9	87	2.1	286082	9115	13543.9	8.5	-9.6	25.59
PA	4210464	Butler city	13757	1921.1	6908	462.7	22061080	61073	1121488.5	9.3	-9.0	24.00
PA	4210600	Byrnedale CDP	427	81.3	200	7.1	698203	10438	35750.6	7.8	-10.0	27.53
PA	4210720	Cairnbrook CDP	520	198.4	233	6.3	719877	9682	35163.4	8.0	-9.7	27.05
PA	4210768	California borough	6795	174.9	2780	55.9	6739856	90630	279095.2	10.4	-7.3	29.86
PA	4210792	Callensburg borough	207	31.3	63	3.2	238960	3023	11948.4	8.8	-9.9	24.72
PA	4210800	Callery borough	394	292.0	135	4.4	424272	6965	19021.1	9.7	-8.5	23.29
PA	4210808	Callimont borough	41	6.8	29	0.5	77748	15703	3744.5	7.9	-9.7	24.79
PA	4210816	Caln CDP	1519	642.1	513	20.1	1626993	15412	64569.1	11.1	-6.4	24.15
PA	4210832	Calumet CDP	1241	223.1	476	27.0	1738206	19261	79910.9	10.0	-8.3	26.53
PA	4210912	Cambridge Springs borough	2595	689.5	836	26.6	2229274	14884	103259.4	8.3	-9.7	25.17
PA	4210960	Campbelltown CDP	3616	279.5	1224	28.4	3742954	32212	95493.2	10.8	-7.0	24.15
PA	4211000	Camp Hill borough	7888	1189.8	3576	319.6	14245922	52949	587222.4	11.2	-6.2	24.15
PA	4211072	Canadohta Lake CDP	516	175.7	831	5.3	2487524	20709	103787.0	7.9	-10.0	28.59
PA	4211152	Canonsburg borough	8992	1253.4	4403	201.2	12636872	51119	495798.1	10.1	-7.9	28.22
PA	4211160	Canton borough	1976	453.7	946	27.8	2262304	15295	104016.7	8.1	-9.9	27.75
PA	4211232	Carbondale city	8891	1001.8	4156	168.9	11935630	49139	607369.1	7.7	-11.3	18.86
PA	4211272	Carlisle borough	18682	1206.7	8242	542.0	22417750	108987	977432.3	11.0	-6.7	23.78
PA	4211328	Carmichaels borough	483	985.0	218	6.0	694640	3982	29417.7	10.6	-7.2	24.11
PA	4211336	Carnegie borough	7972	2159.5	4208	252.0	12182805	37529	484853.0	10.4	-7.9	21.62
PA	4211348	Carnot-Moon CDP	11372	612.9	4924	271.4	12895750	85082	590907.2	10.0	-7.8	21.84
PA	4211456	Carrolltown borough	853	285.6	358	11.3	1203921	13003	61831.1	7.7	-9.9	26.75
PA	4211472	Carroll Valley borough	3876	169.3	1408	39.1	4832822	100774	174029.4	10.9	-6.7	24.15
PA	4211576	Cashtown CDP	459	106.0	227	3.6	690071	8955	27823.6	10.8	-6.8	24.15
PA	4211616	Cassandra borough	147	202.0	68	1.9	236534	1417	11511.7	8.5	-10.0	24.57
PA	4211624	Casselman borough	94	40.1	38	1.1	131061	4038	6266.5	8.5	-9.7	27.84
PA	4211632	Cassville borough	143	52.0	83	1.3	261474	2576	11440.2	9.5	-7.8	22.53
PA	4211648	Castanea CDP	1125	179.4	450	11.7	1381650	12505	62838.4	9.1	-8.9	21.97
PA	4211680	Castle Shannon borough	8316	1721.6	4194	166.9	11620163	37334	495310.0	10.0	-8.0	21.51
PA	4211720	Catasauqua borough	6436	1356.0	2743	70.5	6967616	26773	198338.1	10.5	-7.2	24.15
PA	4211736	Catawissa borough	1552	615.4	707	19.0	1915156	12500	82398.1	9.5	-9.0	19.91
PA	4211804	Cecil-Bishop CDP	2476	282.8	1079	57.9	3870610	36242	95386.2	10.0	-8.0	25.74
PA	4211836	Cedar Crest CDP	195	486.0	70	2.1	235754	4068	9823.5	10.4	-7.3	21.10
PA	4211976	Cementon CDP	1538	626.2	670	37.7	2086344	12458	83077.3	10.2	-7.3	24.15
PA	4212104	Centerport borough	387	275.8	196	5.0	555821	3484	23444.4	10.3	-7.7	24.15
PA	4212184	Centerville borough	218	41.8	1461	36.0	4869373	93950	11633.6	7.9	-10.3	26.18
PA	4212224	Centerville borough	3263	107.1	72	2.2	237267	10688	178643.0	10.4	-7.4	25.84

PA	4212296	Central City borough	1124	245.6	546	13.7	1645784	12224	79950.5	8.0	-10.0	26.37
PA	4212376	Centre Hall borough	1265	433.9	533	13.0	1633321	13698	67644.1	9.1	-8.6	18.74
PA	4212396	Cetronia CDP	2115	796.0	891	56.7	3342152	15970	99102.2	10.4	-7.3	24.15
PA	4212496	Chalfant borough	800	2043.4	490	5.7	1385889	4117	51945.3	10.1	-8.1	18.64
PA	4212504	Chalfont borough	4009	786.4	1482	35.8	4438818	30022	96204.4	11.2	-6.2	24.15
PA	4212512	Chalkhill CDP	141	44.7	43	1.3	105597	6357	4991.3	8.7	-8.9	31.46
PA	4212536	Chambersburg borough	20268	847.3	8876	670.0	25979361	119877	1181840.8	10.9	-6.8	24.15
PA	4212656	Chapman borough	199	109.4	97	1.5	229898	3675	9824.8	9.7	-7.8	24.15
PA	4212704	Charleroi borough	4120	1715.5	2628	45.5	6565583	18193	196048.2	10.7	-7.5	28.01
PA	4212864	Chase CDP	978	119.6	484	11.9	1615750	17202	69963.8	8.1	-9.2	20.67
PA	4213120	Cherry Tree borough	364	156.5	133	3.7	422612	6664	20134.9	8.5	-9.6	21.46
PA	4213152	Cherry Valley borough	66	18.3	32	0.7	107111	10241	5067.3	8.5	-9.8	22.99
PA	4213168	Cherryville CDP	1580	179.8	595	14.7	2034773	31210	88891.9	9.8	-7.8	24.15
PA	4213208	Chester city	33972	2078.2	15723	316.0	31599920	114015	1155587.8	12.5	-4.6	24.15
PA	4213216	Chesterbrook CDP	4589	716.5	2387	162.0	5669837	26933	190631.9	11.5	-6.1	24.15
PA	4213232	Chester Heights borough	2531	422.3	1213	10.3	2386887	27098	77339.8	11.8	-5.1	24.15
PA	4213240	Chester Hill borough	883	555.9	471	7.8	1207520	9215	54191.7	8.2	-9.5	25.20
PA	4213384	Chest Springs borough	149	53.2	55	2.0	178396	3128	9078.6	8.0	-9.5	23.06
PA	4213392	Cheswick borough	1746	880.3	805	12.5	2425564	10535	96380.0	10.2	-8.5	20.99
PA	4213400	Chevy Chase Heights CDP	1502	626.2	485	41.8	1737452	18474	96043.4	8.8	-9.2	29.04
PA	4213408	Chewton CDP	488	91.1	204	2.6	650530	12175	28169.8	9.6	-8.5	29.39
PA	4213418	Cheyney University CDP	988	718.0	13	5.9	139321	4041	6643.4	11.6	-5.7	24.15
PA	4213440	Chicora borough	1043	297.4	464	11.6	1341169	10333	62125.9	8.9	-9.5	20.99
PA	4213480	Chinchilla CDP	2098	258.4	922	40.3	3072732	28612	104282.0	7.5	-10.4	20.00
PA	4213512	Christiana borough	1168	447.8	449	7.6	1122960	8339	44639.0	10.9	-6.6	24.15
PA	4213596	Church Hill CDP	1627	282.5	879	17.8	2659324	23403	95746.3	10.0	-8.0	19.08
PA	4213608	Churchill borough	3011	795.1	1393	21.5	4445848	37472	96153.1	9.8	-8.3	18.67
PA	4213632	Churchtown CDP	470	84.1	154	3.0	481915	13832	19604.4	10.7	-7.2	24.15
PA	4213648	Churchville CDP	4128	757.9	1349	86.1	5492917	37785	189617.4	11.4	-5.9	24.15
PA	4213704	Clairton city	6796	994.5	4197	81.8	11271906	51678	386139.1	10.5	-7.8	21.71
PA	4213768	Clarence CDP	626	87.2	211	6.5	725259	17432	34871.8	8.3	-9.5	20.68
PA	4213776	Clarendon borough	450	270.2	258	5.0	775497	3249	38375.6	7.6	-10.7	31.43
PA	4213800	Clarion borough	5276	1236.0	2198	189.3	6177289	31409	314011.7	8.1	-10.3	31.93
PA	4213832	Clark borough	640	70.2	242	9.1	853446	18792	39409.8	9.1	-9.0	32.53
PA	4213864	Clarks Green borough	1476	1116.8	609	17.1	2082123	12101	104145.6	7.6	-10.2	18.55
PA	4213880	Clarks Summit borough	5116	952.0	2171	199.7	8442796	37879	422488.8	7.8	-10.2	18.76
PA	4213896	Clarksville borough	230	147.8	114	2.8	362697	2530	15316.0	10.6	-7.5	25.19
PA	4213952	Clay CDP	1559	141.1	381	15.6	1404361	21515	57492.7	10.8	-7.1	24.15
PA	4213992	Claysburg CDP	1625	122.8	709	20.3	2317927	28347	97614.0	9.3	-8.1	23.54
PA	4214000	Claysville borough	829	434.4	204	9.2	729727	6639	33647.9	9.9	-8.3	24.48
PA	4214064	Clearfield borough	6215	1101.4	3242	243.2	10940713	45523	521199.7	8.5	-9.5	28.51
PA	4214160	Cleona borough	2080	858.6	999	19.0	2647279	15657	96806.8	10.7	-7.3	24.15
PA	4214264	Clifton Heights borough	6652	3659.4	2860	121.6	6269662	15660	196175.8	12.2	-4.8	24.15
PA	4214296	Clinton CDP	434	63.9	176	5.3	562492	11200	24687.5	9.7	-8.0	20.85
PA	4214376	Clintonville borough	508	144.0	194	3.1	500883	7856	23127.4	8.5	-9.7	25.70
PA	4214520	Clymer borough	1357	413.2	660	13.7	1849021	14079	84652.1	8.7	-9.4	26.31
PA	4214568	Coal Center borough	139	767.2	132	1.5	382252	2790	15387.9	10.8	-7.2	25.66
PA	4214584	Coaldale borough	161	76.0	1250	27.2	3063203	14469	9295.7	9.5	-8.4	23.10
PA	4214600	Coaldale borough	2281	353.1	60	2.1	203773	875	102723.1	8.7	-9.1	21.40
PA	4214640	Coalmont borough	106	44.0	22	1.0	80293	1816	3709.3	9.4	-8.2	23.18
PA	4214656	Coalport borough	523	162.8	272	4.6	682982	7699	32145.3	8.3	-9.5	22.41
PA	4214712	Coatesville city	13100	1717.2	5206	125.7	10184530	40851	392606.8	11.0	-6.4	24.15
PA	4214760	Coburn CDP	236	87.0	54	2.4	159168	3132	7302.7	9.4	-8.8	20.43
PA	4214800	Cochranton borough	1136	276.8	511	11.6	1526917	13697	67954.0	8.6	-9.7	25.95

PA	4214808	Cochranville CDP	668	144.6	256	4.0	799894	10776	31873.7	10.9	-6.4	24.15
PA	4214896	Cokeburg borough	630	171.8	314	7.0	804537	7224	34095.8	10.3	-7.8	23.42
PA	4215192	Collegeville borough	5089	1619.1	1272	145.4	4945455	29254	192929.6	11.2	-6.5	24.15
PA	4215232	Collingdale borough	8786	3856.6	3543	123.1	8472000	22284	291439.9	12.3	-4.6	24.15
PA	4215248	Collinsburg CDP	1125	458.5	352	17.1	1334362	17551	57856.7	10.5	-7.6	19.89
PA	4215328	Colonial Park CDP	13229	1152.7	6265	279.1	16578249	91748	686101.1	10.9	-6.4	24.15
PA	4215368	Colony Park CDP	1076	1045.3	397	14.2	1431257	8659	50878.6	10.6	-7.2	24.15
PA	4215384	Columbia borough	10400	1544.0	4428	144.2	10251951	48969	386908.4	11.2	-6.5	24.15
PA	4215400	Columbus CDP	824	89.9	260	9.1	841411	16677	42467.2	7.9	-9.9	47.32
PA	4215416	Colver CDP	959	292.1	358	20.9	1308735	15917	69254.2	7.7	-10.1	20.90
PA	4215432	Colwyn borough	2546	3567.3	1000	10.4	2128066	5212	75998.7	12.5	-4.5	24.15
PA	4215464	Commodore CDP	331	84.0	144	3.3	408639	8443	19279.2	8.5	-9.6	29.00
PA	4215479	Conashaugh Lakes CDP	1294	71.4	336	9.7	1188968	38411	67902.2	7.5	-11.1	24.75
PA	4215584	Conestoga CDP	1258	161.8	491	8.2	1433240	16818	56464.4	11.1	-6.4	24.15
PA	4215680	Confluence borough	780	150.0	359	9.5	1042310	15574	46429.9	9.5	-8.8	24.72
PA	4215744	Conneaut Lake borough	653	222.5	286	6.7	810957	6756	37956.2	8.5	-9.6	25.46
PA	4215755	Conneaut Lakeshore CDP	2395	180.8	2177	24.6	6534224	61606	200512.3	8.5	-9.6	25.45
PA	4215760	Conneautville borough	774	252.4	377	7.9	1012212	13241	46814.7	8.6	-9.3	26.04
PA	4215776	Connellsville city	7637	1426.6	3866	207.3	10935104	47954	487288.8	10.3	-8.1	28.88
PA	4215808	Connoquenessing borough	528	126.8	242	5.9	787828	8843	35829.9	9.2	-8.8	23.33
PA	4215848	Conshohocken borough	7833	2155.9	4280	363.0	11112047	24035	386042.3	11.9	-5.4	24.15
PA	4215872	Conway borough	2176	621.7	1024	16.8	2851510	15712	97990.0	10.2	-7.8	24.06
PA	4215888	Conyngham borough	1914	376.1	856	23.4	2506690	15355	101749.6	8.6	-9.4	20.50
PA	4216056	Coopersburg borough	2386	695.8	1015	19.8	2663283	19969	97400.4	10.3	-7.4	24.15
PA	4216080	Cooperstown borough	460	148.8	200	2.8	636711	7502	29355.6	8.5	-9.8	27.68
PA	4216128	Coplay borough	3192	1865.3	1414	26.4	3686043	15029	99286.4	10.4	-7.2	24.15
PA	4216136	Coral CDP	325	183.0	82	3.3	219045	3917	9932.6	9.6	-9.2	25.39
PA	4216144	Coraopolis borough	5677	1483.3	3040	220.0	9557719	31722	392611.0	10.3	-7.7	21.75
PA	4216256	Cornwall borough	4112	116.7	1667	37.5	5001015	86050	182617.8	10.1	-7.5	24.15
PA	4216272	Cornwells Heights CDP	1391	737.5	557	35.1	1613108	11178	64435.9	11.8	-5.4	24.15
PA	4216296	Corry city	6605	427.4	2664	195.0	9024429	67981	422662.5	7.8	-10.0	35.32
PA	4216304	Corsica borough	357	208.4	156	5.5	468255	5405	24042.1	7.8	-10.4	19.80
PA	4216448	Coudersport borough	2546	160.2	1205	41.8	3653367	38447	105259.3	6.9	-11.3	27.54
PA	4216568	Courtdale borough	732	501.4	333	8.9	1086807	9678	50539.1	8.9	-8.6	20.64
PA	4216816	Crabtree CDP	277	199.0	276	2.4	783410	2364	33243.4	9.8	-8.7	23.76
PA	4216848	Crafton borough	5951	1944.7	3230	88.4	7587332	26469	292547.8	10.3	-7.8	21.49
PA	4216960	Cranesville borough	638	186.3	193	3.7	585072	6994	27095.6	8.6	-9.1	22.62
PA	4217024	Creekside borough	309	186.3	161	3.1	475659	3589	21314.7	9.3	-9.2	28.81
PA	4217040	Crenshaw CDP	468	102.8	248	7.3	832354	6921	42294.8	7.8	-10.3	22.44
PA	4217136	Cresson borough	1711	928.9	754	22.7	2125088	11491	106404.0	7.8	-10.0	24.72
PA	4217152	Cressona borough	1651	489.3	723	19.7	2169588	14846	94998.2	9.8	-8.3	22.34
PA	4217320	Cross Creek CDP	137	46.3	58	1.5	194913	4200	8804.6	9.6	-8.5	28.68
PA	4217416	Cross Roads borough	512	103.0	208	3.2	647515	13753	26113.3	10.8	-6.7	24.15
PA	4217440	Crown CDP	183	18.9	123	2.8	411619	19839	20922.0	7.5	-10.7	25.18
PA	4217448	Croydon CDP	9950	1153.4	4119	156.3	12245918	53431	384535.4	11.8	-5.5	24.15
PA	4217528	Crucible CDP	725	169.7	289	4.6	853313	12974	35763.1	10.5	-7.2	27.32
PA	4217680	Cumbola CDP	443	233.2	217	5.3	569384	4562	25184.2	9.3	-8.8	21.89
PA	4217832	Curtisville CDP	1064	258.3	415	10.9	1182312	12806	49783.8	9.6	-8.7	23.25
PA	4217840	Curwensville borough	2542	342.8	1175	22.5	3164748	36420	99578.8	8.4	-9.6	30.33
PA	4217976	Daisytown borough	326	919.0	109	4.3	395885	3477	19187.2	9.0	-8.7	25.26
PA	4218000	Dale borough	1234	1819.3	663	16.4	1675637	4559	69877.2	9.3	-8.7	25.13
PA	4218048	Dallas borough	2804	395.7	1189	34.2	3644550	30526	102864.5	8.2	-9.4	20.60
PA	4218072	Dallastown borough	4049	1237.2	1874	25.3	4525938	18690	99042.5	10.6	-6.9	24.15
PA	4218080	Dalmatia CDP	488	74.0	235	4.8	730033	9853	30884.2	10.1	-7.6	21.80

PA	4218088	Dalton borough	1234	186.4	553	14.3	1815658	27410	81370.3	8.1	-10.0	19.73
PA	4218136	Danville borough	4699	1025.6	2329	80.2	6006651	29810	198765.1	9.7	-8.4	19.98
PA	4218152	Darby borough	10687	4755.1	3941	101.6	8833822	19881	296793.9	12.4	-4.5	24.15
PA	4218192	Darlington borough	254	74.8	87	2.0	283475	2138	12545.3	9.9	-8.3	29.89
PA	4218256	Dauberville CDP	848	121.8	305	11.1	1036817	19849	44457.0	10.3	-7.5	24.15
PA	4218272	Dauphin borough	791	480.4	340	7.7	1059981	9166	43590.8	10.8	-6.9	23.26
PA	4218312	Davidsville CDP	1130	184.2	609	13.0	1956522	20682	84454.9	8.5	-9.2	26.41
PA	4218360	Dawson borough	367	401.6	144	3.5	465392	4552	19575.2	10.5	-7.5	25.29
PA	4218400	Dayton borough	553	372.8	203	7.3	700038	5898	34932.2	8.5	-9.9	21.54
PA	4218496	Deemston borough	722	38.9	367	8.0	1225512	46450	52440.8	10.3	-7.6	25.25
PA	4218568	Deer Lake CDP	495	104.4	308	4.7	995402	18106	45510.8	8.8	-9.1	32.50
PA	4218576	Deer Lake borough	687	283.2	270	8.2	920606	8736	40759.9	9.6	-8.4	24.15
PA	4218608	Defiance CDP	239	27.3	113	3.0	364326	3579	16384.3	9.5	-8.0	23.08
PA	4218664	Delano CDP	342	188.2	163	4.1	383593	4734	18583.4	7.7	-9.2	20.84
PA	4218736	Delaware Water Gap borough	746	88.1	394	2.5	895425	16686	39029.2	9.1	-8.7	24.15
PA	4218768	Delmont borough	2686	599.4	1262	30.1	3420913	22355	98619.5	9.4	-8.9	22.41
PA	4218800	Delta borough	728	376.9	284	4.6	782780	5865	30709.9	11.2	-6.2	24.15
PA	4218888	Denver borough	3861	667.4	1434	25.0	3771547	25232	95904.9	10.7	-7.3	24.15
PA	4218960	Derry borough	2688	920.0	1326	30.1	3913334	19027	97572.1	9.4	-9.8	29.87
PA	4219040	Devon CDP	1515	882.0	538	32.9	2104144	13716	82100.3	11.1	-5.8	24.15
PA	4219048	Dewart CDP	1471	223.4	505	14.3	1580458	21971	63667.0	9.8	-8.3	24.38
PA	4219160	Dickson City borough	6070	563.0	2892	304.4	10852235	51243	525656.3	8.3	-9.8	22.49
PA	4219161	Dicksonville CDP	467	104.8	200	4.7	611448	11003	28582.9	8.7	-9.5	26.58
PA	4219208	Dillsburg borough	2563	622.1	1082	16.0	2795840	16723	96633.6	10.9	-6.6	24.15
PA	4219432	Donaldson CDP	328	292.6	151	3.9	483366	2930	21727.0	9.2	-8.7	22.12
PA	4219472	Donegal borough	120	107.6	70	1.3	222001	4569	10328.7	8.6	-9.2	29.80
PA	4219536	Donora borough	4781	1038.5	2889	66.0	8148064	37217	289445.7	10.7	-7.5	24.88
PA	4219576	Dormont borough	8593	3946.4	4413	144.0	11403910	19645	504218.2	9.9	-8.0	21.38
PA	4219584	Dorneyville CDP	4406	774.9	1833	101.2	7259822	43770	298542.9	10.4	-7.3	24.15
PA	4219680	Douglassville CDP	448	235.3	190	5.8	306380	8255	12218.4	11.0	-6.9	24.15
PA	4219696	Dover borough	2007	656.0	930	12.6	2266722	12251	80906.3	11.3	-6.3	24.15
PA	4219752	Downingtown borough	7891	902.9	3589	252.0	9174300	37667	387706.4	11.3	-6.2	24.15
PA	4219784	Doylestown borough	8380	1152.6	4329	541.0	14523913	47933	592352.9	11.0	-6.4	24.15
PA	4219856	Dravosburg borough	1792	924.2	989	12.8	2532534	17447	94942.6	10.5	-7.8	20.31
PA	4219920	Drexel Hill CDP	28043	3507.1	12380	368.3	29402557	79447	1081673.1	12.1	-4.9	24.15
PA	4219976	Driftwood borough	67	20.5	101	1.3	305253	9763	14530.9	8.1	-10.0	27.40
PA	4220080	Dry Tavern CDP	697	139.6	210	8.6	779275	14648	34294.1	10.5	-7.3	24.72
PA	4220096	Dryville CDP	398	109.5	200	5.2	660846	11519	28666.2	9.8	-8.0	24.15
PA	4220104	Dublin borough	2158	942.3	923	19.3	1739300	10844	67077.1	10.5	-6.9	24.15
PA	4220136	DuBois city	7794	854.5	3832	384.0	14996177	61836	856787.0	8.1	-9.9	33.74
PA	4220144	Duboistown borough	1205	602.5	546	17.6	1771439	10551	78407.8	9.6	-8.6	26.98
PA	4220152	Dudley borough	184	119.6	78	1.7	257895	3932	11644.0	9.1	-8.6	23.16
PA	4220216	Dunbar borough	1042	483.7	458	9.9	1359028	11684	57914.3	10.2	-7.6	27.40
PA	4220240	Duncannon borough	1522	974.6	726	16.4	1771497	9471	66011.7	11.0	-7.0	23.19
PA	4220248	Duncansville borough	1233	421.2	648	15.4	1644261	11090	67784.4	9.8	-7.8	24.60
PA	4220328	Dunlevy borough	381	147.1	133	4.2	435349	4836	18619.6	10.7	-7.3	21.71
PA	4220336	Dunlo CDP	342	97.8	106	3.8	307591	5702	16385.5	7.6	-10.2	24.27
PA	4220352	Dunmore borough	14057	592.8	6374	324.0	18039710	100723	937889.6	7.9	-10.5	27.36
PA	4220416	Dunnstown CDP	1360	366.1	441	14.1	1500906	17206	64980.7	9.8	-8.5	22.29
PA	4220424	Dupont borough	2711	496.3	1311	33.1	4115971	26371	99493.5	8.9	-9.4	22.12
PA	4220432	Duquesne city	5565	1296.5	3571	68.8	9092336	33396	387637.4	10.5	-7.9	19.51
PA	4220512	Duryea borough	4917	387.5	2417	60.0	7255868	40246	301257.1	9.1	-9.0	21.72
PA	4220528	Dushore borough	608	186.9	380	10.5	914702	9959	46746.5	7.5	-10.4	27.05
PA	4220634	Eagle Lake CDP	12	6.0	24	0.1	73737	42869	3722.2	6.7	-11.4	30.01
PA	4220648	Eagles Mere borough	120	26.2	351	2.1	1054701	19284	52162.3	7.1	-10.4	24.46
PA	4220662	Eagleview CDP	1644	410.5	822	44.4	2200138	22131	92355.3	10.9	-6.6	24.15

PA	4220664	Eagleville CDP	324	40.2	1047	77.7	3231587	21623	17590.2	9.4	-8.6	18.47
PA	4220672	Eagleville CDP	4800	1209.9	112	3.3	389947	7859	96177.4	11.0	-6.3	24.15
PA	4220704	Earlston CDP	1122	180.5	560	14.3	1836229	20186	80230.6	9.9	-7.8	24.91
PA	4220776	East Bangor borough	1172	394.2	429	8.7	1204235	10967	51401.0	9.3	-8.5	24.15
PA	4220792	East Berlin borough	1521	526.7	737	15.3	2027321	14577	79386.8	11.3	-6.3	24.15
PA	4220800	East Berwick CDP	2007	1005.3	729	24.5	2399300	19027	98346.2	9.4	-8.6	20.45
PA	4220840	East Brady borough	942	256.6	547	14.6	1507976	13732	67239.4	9.1	-9.4	23.44
PA	4220904	East Butler borough	732	236.3	313	8.2	985342	13337	44999.9	9.2	-9.2	23.42
PA	4220992	East Conemaugh borough	1220	643.7	666	16.2	1886841	6125	83565.5	9.6	-9.2	25.85
PA	4221064	East Earl CDP	1144	203.8	404	17.0	1416768	13164	56978.5	10.6	-7.1	24.15
PA	4221176	East Freedom CDP	972	208.2	231	12.1	799848	23033	36880.6	9.8	-7.8	24.02
PA	4221200	East Greenville borough	2951	1585.2	1211	17.9	2751474	12394	97979.2	10.6	-7.1	24.15
PA	4221384	East Lansdowne borough	2668	3269.9	1033	10.9	2430561	5292	82567.5	12.3	-4.6	24.15
PA	4221400	Eastlawn Gardens CDP	3307	388.4	1193	23.9	3670071	24216	98373.7	10.1	-7.6	24.15
PA	4221444	East McKeesport borough	2126	1545.1	1159	15.2	2943544	10689	99159.4	9.9	-8.1	19.27
PA	4221648	Easton city	26800	2047.7	10523	503.0	24973495	91114	992532.1	10.3	-7.5	24.15
PA	4221688	East Petersburg borough	4506	903.3	1835	29.2	5077202	25964	193118.3	11.0	-6.8	24.15
PA	4221712	East Pittsburgh borough	1822	1019.9	1082	13.0	2184711	8965	80641.4	10.4	-8.1	18.87
PA	4221728	East Prospect borough	905	478.5	248	5.7	755782	5994	30062.7	11.3	-6.5	24.15
PA	4221752	East Rochester borough	567	679.6	321	4.4	756945	7126	31979.9	10.2	-8.0	24.91
PA	4221786	East Rutherford CDP	196	87.8	81	2.5	248442	4063	10380.7	10.5	-7.9	22.54
PA	4221792	East Salem CDP	186	50.7	47	2.3	161001	2740	7024.7	10.2	-7.8	22.53
PA	4221816	East Side borough	317	47.7	113	3.6	366937	6150	18300.5	8.0	-10.1	22.11
PA	4221872	East Stroudsburg borough	9840	1138.9	3282	400.0	11876556	52046	607281.7	9.4	-8.8	24.15
PA	4221960	East Uniontown CDP	2419	293.9	962	31.9	2862494	24640	95577.3	10.3	-7.5	25.56
PA	4221968	Eastvale borough	225	874.8	124	1.7	378610	2314	16322.0	9.9	-8.2	27.61
PA	4221976	East Vandergrift borough	674	1571.5	308	7.6	1019139	3554	44731.2	9.9	-9.1	16.98
PA	4222016	East Washington borough	2234	1265.8	869	24.7	2228777	10537	99486.9	9.9	-8.2	31.94
PA	4222104	East York CDP	8777	1186.5	3932	233.6	12099281	62860	484394.4	11.1	-6.6	24.15
PA	4222128	Eau Claire borough	316	96.9	96	3.5	297228	7693	14565.4	8.4	-9.8	21.77
PA	4222144	Ebensburg borough	3351	741.4	1740	44.4	4288287	28896	211163.4	7.9	-9.7	28.20
PA	4222264	Economy borough	8970	191.5	3486	54.0	11228196	143649	468668.0	9.9	-8.0	23.83
PA	4222280	Eddington CDP	1906	957.8	767	48.2	3086246	13935	96163.6	11.7	-5.4	24.15
PA	4222296	Eddystone borough	2410	259.9	1033	9.9	1904802	18072	62386.8	12.5	-4.6	24.15
PA	4222344	Edenborn CDP	294	261.6	83	2.6	294786	5304	12296.5	10.5	-7.2	20.93
PA	4222352	Edenburg CDP	681	142.1	293	8.9	946679	7273	41220.3	9.9	-8.2	24.15
PA	4222520	Edgewood borough	3118	2387.1	1566	22.3	4082321	14454	97849.3	10.2	-8.2	18.99
PA	4222528	Edgewood CDP	2384	2199.7	1283	20.5	2972796	9824	102421.1	9.2	-8.7	20.39
PA	4222576	Edgeworth borough	1680	671.2	645	12.0	2072618	22601	78854.3	10.3	-7.8	22.11
PA	4222600	Edie CDP	83	23.2	30	1.0	105146	4230	5140.3	8.2	-9.7	28.75
PA	4222608	Edinboro borough	6438	897.0	3110	113.6	7150501	35466	318432.4	8.2	-9.4	24.74
PA	4222672	Edwardsville borough	4816	1888.3	2683	58.8	5731274	18419	203509.9	9.4	-8.6	20.80
PA	4222680	Effort CDP	2269	147.2	664	31.3	2368701	50480	92307.3	8.9	-8.8	22.04
PA	4222696	Egypt CDP	2391	591.8	846	58.7	3296734	23449	97496.6	10.2	-7.4	24.15
PA	4222712	Ehrenfeld borough	228	188.5	99	3.0	321332	4247	15297.6	8.9	-9.0	24.19
PA	4222736	Eighty Four CDP	657	40.1	321	7.3	975762	39380	41618.5	10.1	-7.9	31.45
PA	4222800	Elco borough	323	281.5	133	3.6	439629	4517	18456.8	10.8	-7.3	24.20
PA	4222832	Elderton borough	356	157.7	139	4.7	455303	6156	21874.7	9.0	-9.2	23.01
PA	4222888	Eldred borough	825	282.1	349	11.7	1103656	9426	54893.7	7.1	-11.6	29.70
PA	4222960	Elgin borough	218	48.8	94	1.3	297555	5820	14182.2	7.9	-9.8	26.17
PA	4222976	Elim CDP	3727	715.0	1786	41.3	5732838	32951	204215.9	9.0	-8.8	25.54
PA	4222992	Elizabeth borough	1493	1103.5	706	10.7	1757620	9061	65304.2	10.6	-7.8	21.52

PA	4223016	Elizabethtown borough	11545	1294.3	4320	162.4	10515204	54828	386958.8	10.9	-6.7	24.15
PA	4223024	Elizabethville borough	1510	367.1	677	14.7	1741860	11517	66983.0	10.0	-7.9	22.47
PA	4223152	Elkland borough	1821	292.6	805	27.9	2423776	19163	104723.6	7.7	-10.5	27.94
PA	4223280	Ellport borough	1180	736.0	564	6.3	1685536	9775	67389.3	9.7	-8.6	28.36
PA	4223296	Ellsworth borough	1027	420.6	466	11.3	1192806	12137	49785.6	10.2	-7.7	26.21
PA	4223304	Ellwood City borough	7921	1238.3	3798	42.0	10421179	51378	400444.6	9.7	-8.3	28.86
PA	4223392	Elrama CDP	307	22.4	90	2.6	309482	3130	12440.0	10.8	-7.8	22.42
PA	4223440	Elverson borough	1225	237.6	595	7.3	1529681	16095	62408.1	10.4	-7.1	24.15
PA	4223472	Elysburg CDP	2194	227.1	1068	21.4	3047690	34102	95474.3	9.5	-8.6	19.51
PA	4223540	Emerald Lakes CDP	2886	160.8	1528	72.4	5956910	50985	320318.8	6.9	-10.9	24.54
PA	4223560	Emigsville CDP	2672	672.8	1091	52.2	3338153	20827	94947.5	11.3	-6.3	24.15
PA	4223568	Emlenton borough	625	340.5	340	3.8	953215	11321	42377.6	9.0	-9.7	22.81
PA	4223584	Emmaus borough	11211	1263.4	4928	256.5	14229823	60051	588692.6	10.3	-7.6	24.15
PA	4223600	Emporium borough	2073	360.6	1134	40.7	3075277	15886	104084.9	8.1	-10.4	32.51
PA	4223616	Emsworth borough	2449	958.9	1149	17.5	2715544	12600	96808.1	10.4	-7.8	21.83
PA	4223688	Englewood CDP	532	876.3	262	3.7	820571	7554	38400.4	8.2	-9.4	21.08
PA	4223704	Enhaut CDP	1007	1557.6	332	25.6	1307161	5350	51551.6	11.2	-6.2	24.15
PA	4223720	Enlow CDP	1013	529.5	138	12.9	494073	11682	23173.3	10.1	-7.9	21.31
PA	4223744	Enola CDP	6111	930.7	2712	81.4	6356299	38979	195264.6	11.1	-6.3	24.15
PA	4223768	Enon Valley borough	306	180.3	150	1.6	456960	6870	19608.3	9.7	-8.3	30.83
PA	4223832	Ephrata borough	13394	1235.8	5833	326.0	16121485	68731	688317.9	10.7	-7.0	24.15
PA	4224000	Erie city	101786	2067.9	44898	2015.0	124957372	440652	6222000.2	9.0	-8.3	24.80
PA	4224040	Ernest borough	462	261.4	166	4.7	543392	4963	25118.5	9.0	-9.3	27.59
PA	4224088	Espy CDP	1642	467.1	825	20.1	2161615	15238	95832.2	9.6	-8.8	20.18
PA	4224160	Etna borough	3451	1503.8	1933	24.7	4765876	18704	194394.3	10.4	-7.9	21.90
PA	4224240	Evansburg CDP	2129	371.3	741	34.5	2359890	22595	93075.7	11.2	-6.5	24.15
PA	4224248	Evans City borough	1833	435.6	787	20.4	2267576	15526	98836.1	9.7	-8.6	23.51
PA	4224304	Everett borough	1834	402.8	879	23.4	2171093	18615	94983.8	9.9	-7.7	24.73
PA	4224336	Everson borough	793	716.1	447	7.6	1293930	3785	52335.1	10.2	-7.8	26.73
PA	4224392	Exeter borough	5652	717.4	2228	73.6	6466943	41451	201823.7	9.1	-8.7	20.65
PA	4224432	Export borough	917	402.5	481	10.3	1255924	7098	50994.9	9.8	-8.7	21.44
PA	4224440	Exton CDP	4842	558.4	2339	231.5	5967035	50251	189114.8	11.1	-6.3	24.15
PA	4224448	Eyers Grove CDP	105	72.5	41	1.3	120579	3538	5554.6	9.1	-9.0	20.67
PA	4224488	Factoryville borough	1158	303.9	383	18.1	1205911	12006	52744.1	8.4	-9.6	20.46
PA	4224536	Fairchance borough	1975	513.6	851	18.9	2471045	19703	94012.5	10.4	-8.1	25.49
PA	4224544	Fairdale CDP	2059	345.3	919	13.1	2472465	24595	94469.2	10.6	-7.1	24.42
PA	4224560	Fairfield borough	507	226.8	262	5.1	761425	6041	30300.0	11.0	-6.7	24.15
PA	4224664	Fairhope CDP	1151	588.8	503	11.0	1513883	13617	62579.3	10.7	-7.5	20.07
PA	4224712	Fairless Hills CDP	8466	1655.0	3463	160.3	10961732	41373	388119.9	11.6	-5.6	24.15
PA	4224832	Fairview borough	198	104.0	77	2.2	264770	2135	12603.6	8.6	-9.6	19.99
PA	4224856	Fairview CDP	2348	202.4	987	38.7	3199703	31995	99592.3	9.0	-8.4	21.12
PA	4224948	Fairview-Ferndale CDP	2139	502.2	1127	18.4	3027410	18450	100486.2	9.2	-8.7	20.61
PA	4225136	Falls Creek borough	1037	226.6	475	16.1	1527757	11549	70407.8	8.1	-10.0	26.34
PA	4225152	Fallston borough	266	426.0	140	2.1	437911	6983	18593.6	10.2	-7.9	26.49
PA	4225168	Falmouth CDP	420	106.2	161	2.7	508279	8631	19931.8	11.2	-6.1	24.15
PA	4225248	Farmersville CDP	991	109.8	417	14.6	931700	14924	37683.9	10.9	-6.9	24.15
PA	4225280	Farmington CDP	767	118.8	33	7.3	219854	16060	12452.4	8.9	-8.9	31.30
PA	4225360	Farrell city	5111	872.4	2743	84.6	8261182	41054	307044.6	9.3	-8.6	28.42
PA	4225416	Fawn Grove borough	452	90.9	198	2.8	575752	8471	22636.1	11.1	-6.4	24.15
PA	4225420	Fawn Lake Forest CDP	755	65.1	885	3.5	2610581	40218	98086.7	7.5	-11.0	25.58
PA	4225424	Faxon CDP	1395	979.1	673	35.8	2486251	11852	99529.8	9.7	-8.7	26.75
PA	4225456	Fayette City borough	596	428.7	202	5.7	564688	5241	23581.3	10.7	-7.5	20.78
PA	4225464	Fayetteville CDP	3128	313.5	1438	50.6	4688600	37410	191409.3	10.7	-7.0	24.15
PA	4225496	Feasterville CDP	3074	1942.3	1346	140.1	4003604	15517	96182.7	11.4	-5.8	24.15
PA	4225568	Fellsburg CDP	1180	327.2	472	18.0	1725030	19526	74852.9	10.2	-7.7	16.71
PA	4225584	Felton borough	506	151.9	191	3.2	605689	8945	24299.2	10.9	-6.7	24.15

PA	4225680	Ferndale borough	1636	1301.7	826	21.7	2418229	9897	99164.2	9.7	-8.8	25.04
PA	4225744	Fernville CDP	556	496.8	208	6.8	708087	9333	31892.5	9.5	-8.7	20.11
PA	4225752	Fernway CDP	12414	862.1	4590	327.5	16941352	78187	799745.4	9.8	-8.2	23.84
PA	4225944	Finleyville borough	461	204.8	279	5.1	580412	3765	24547.3	10.2	-7.7	22.37
PA	4226232	Fivepointville CDP	1156	239.0	415	10.0	1249850	12876	49054.6	10.7	-7.1	24.15
PA	4226280	Fleetwood borough	4085	930.4	1835	53.3	4954887	24305	195158.7	10.3	-7.9	24.15
PA	4226296	Flemington borough	1330	853.0	575	13.8	1779095	10268	77982.9	9.8	-8.7	20.99
PA	4226376	Flourtown CDP	4538	1177.4	1800	89.9	6632186	31838	192361.7	11.7	-5.5	24.15
PA	4226397	Flying Hills CDP	2568	497.7	1468	30.5	2586379	12156	98208.7	10.6	-7.1	24.15
PA	4226408	Folcroft borough	6606	1337.2	2579	129.3	6201865	18907	191642.7	12.5	-4.6	24.15
PA	4226432	Folsom CDP	8323	2706.7	3304	107.3	9598549	30376	289489.4	12.3	-4.8	24.15
PA	4226488	Foot of Ten CDP	672	130.2	255	10.0	890973	8741	40374.4	9.5	-7.8	24.48
PA	4226504	Force CDP	253	84.6	102	4.2	355746	4040	18580.3	7.7	-10.4	28.16
PA	4226512	Ford City borough	2991	1369.0	1627	39.6	4353915	15807	167579.8	9.5	-9.2	20.12
PA	4226520	Ford Cliff borough	371	155.8	179	4.9	588619	1956	27259.8	9.4	-9.1	19.76
PA	4226560	Forest City borough	1911	640.7	946	26.8	2600247	13657	105465.8	6.9	-12.0	18.78
PA	4226592	Forest Hills borough	6518	1579.3	3365	153.3	11238021	38717	498265.4	9.9	-8.1	18.53
PA	4226704	Forestville CDP	435	154.0	194	5.2	566084	8029	25576.6	9.2	-8.6	21.87
PA	4226760	Forksville borough	145	37.0	100	2.5	290699	6925	14285.2	8.0	-10.2	28.24
PA	4226812	Fort Indiantown Gap CDP	143	8.5	48	1.3	163838	115163	6970.2	10.2	-7.4	22.97
PA	4226824	Fort Loudon CDP	886	57.0	395	4.8	1174922	19719	47326.6	10.6	-7.1	24.76
PA	4226872	Fort Washington CDP	5446	530.5	2012	147.6	7562975	62763	282491.9	11.6	-5.6	24.15
PA	4226880	Forty Fort borough	4214	907.0	1982	51.5	5634367	21979	202906.7	9.4	-8.5	20.79
PA	4226960	Foster Brook CDP	1251	120.6	634	17.8	2172440	19485	106472.9	6.7	-11.5	24.78
PA	4226984	Foundryville CDP	256	621.2	108	3.1	370106	5087	16767.3	9.3	-8.5	20.48
PA	4227008	Fountain Hill borough	4597	2427.9	2067	38.1	4730526	16706	99908.6	10.4	-7.3	24.15
PA	4227024	Fountain Springs CDP	278	125.9	123	1.9	395020	6469	17702.6	9.0	-8.9	21.03
PA	4227112	Foxburg borough	183	154.8	115	2.8	374171	4879	17559.8	8.9	-9.6	21.95
PA	4227120	Fox Chapel borough	5388	305.5	1922	76.2	7116612	93501	284284.4	9.9	-8.2	23.20
PA	4227130	Fox Chase CDP	1622	1031.2	541	39.6	2097466	8977	82706.3	10.6	-7.3	24.15
PA	4227207	Fox Run CDP	3282	396.4	1083	86.6	4541728	29391	199220.5	9.6	-8.4	23.30
PA	4227232	Frackville borough	3805	1707.4	1825	45.4	4609348	15393	211440.3	8.2	-9.4	21.10
PA	4227312	Frankfort Springs borough	130	78.4	47	1.0	157387	2637	7041.6	9.6	-8.4	29.11
PA	4227360	Franklin borough	323	214.6	193	4.3	573083	6097	26001.0	9.3	-9.4	25.81
PA	4227456	Franklin city	6545	564.0	3362	39.5	8137687	58998	304139.1	8.6	-9.5	26.63
PA	4227552	Franklin Park borough	13470	337.8	4729	129.7	15839651	156855	673967.2	9.8	-8.2	22.65
PA	4227576	Franklintown borough	489	256.4	191	3.1	455244	3993	18254.3	10.9	-6.6	24.15
PA	4227648	Fredericksburg CDP	733	127.8	376	19.4	1269110	14193	62897.8	8.3	-9.7	25.35
PA	4227656	Fredericksburg CDP	1357	136.9	447	11.8	1377679	21524	58772.4	10.4	-7.5	24.15
PA	4227672	Fredericktown CDP	403	194.1	170	4.4	479102	7098	20460.6	10.4	-7.4	22.66
PA	4227688	Fredonia borough	502	315.4	285	7.2	745172	6675	34510.1	8.7	-9.5	26.49
PA	4227696	Freeburg borough	575	301.2	294	7.9	877866	6105	37264.3	10.1	-7.9	21.42
PA	4227712	Freedom borough	1569	718.1	745	12.1	2120800	14113	81172.6	10.2	-8.1	24.57
PA	4227744	Freeland borough	3531	1369.8	1843	43.1	4564963	15254	222437.7	7.2	-10.0	20.97
PA	4227760	Freemansburg borough	2636	674.8	869	19.6	2246923	14075	92766.6	10.6	-7.3	24.15
PA	4227784	Freeport borough	1813	532.9	866	24.0	2331056	12541	97950.5	9.6	-8.9	19.59
PA	4227928	Friedens CDP	1523	190.0	494	30.7	1916682	31599	98479.3	8.0	-9.9	27.93
PA	4227936	Friedensburg CDP	858	196.3	244	10.2	828046	13073	37545.3	9.5	-8.3	22.38
PA	4227968	Friendsville borough	111	18.9	36	1.6	130264	6433	6683.1	7.4	-10.3	23.27
PA	4228014	Frizzleburg CDP	602	84.1	144	3.2	418003	14275	18924.4	9.2	-8.7	27.66
PA	4228128	Frystown CDP	380	68.0	157	5.0	420544	8513	17876.1	10.3	-7.7	24.15
PA	4228144	Fullerton CDP	14925	1703.5	6663	366.1	16120825	78807	590008.4	10.5	-7.1	24.15
PA	4228280	Galeton borough	1149	293.2	662	18.9	1988985	15551	100932.9	7.6	-10.7	26.45
PA	4228328	Gallitzin borough	1668	544.5	826	22.1	2499691	14951	107633.5	7.6	-9.8	24.52
PA	4228376	Gap CDP	1931	237.9	547	25.1	1871967	29808	76695.4	10.8	-6.8	24.15

PA	4228456	Garden View CDP	2503	820.6	1156	40.0	3790019	25389	98270.6	9.7	-8.6	27.56
PA	4228488	Gardners CDP	150	68.2	46	1.5	160428	6027	6682.3	10.6	-6.9	24.15
PA	4228520	Garrett borough	456	160.9	144	5.6	484776	8450	23573.4	8.4	-9.5	25.25
PA	4228600	Gastonville CDP	2818	399.2	986	23.7	3181331	33002	94149.4	10.2	-7.8	22.81
PA	4228720	Geistown borough	2467	1015.9	1196	32.7	3640333	23956	102906.6	8.4	-9.5	24.90
PA	4228768	Geneva CDP	109	56.5	41	1.1	126827	1689	6005.6	8.4	-9.5	24.98
PA	4228824	Georgetown borough	174	112.2	67	1.3	206363	5210	8882.9	10.2	-8.1	31.39
PA	4228828	Georgetown CDP	1022	96.1	913	20.0	2752462	13874	34937.4	10.7	-6.8	24.15
PA	4228832	Georgetown CDP	1640	606.7	299	6.6	859333	21531	100525.5	9.1	-9.2	21.04
PA	4228960	Gettysburg borough	7620	1434.8	2563	342.0	8983667	36131	394308.9	11.1	-6.6	24.15
PA	4229000	Gibraltar CDP	680	197.3	218	8.4	719086	13804	28929.2	10.9	-7.0	24.15
PA	4229040	Gibsonia CDP	2733	270.2	980	71.8	4206525	42341	193135.1	9.7	-8.5	22.79
PA	4229088	Gilberton borough	769	852.0	523	9.2	1387400	16722	64021.1	8.4	-9.4	20.98
PA	4229096	Gilbertsville CDP	4832	405.2	1804	84.9	5460376	44668	190921.5	10.7	-7.0	24.15
PA	4229232	Girard borough	3104	415.8	1434	18.1	3770121	29436	100927.6	9.0	-8.5	19.75
PA	4229264	Girardville borough	1519	386.2	792	18.1	1862124	9147	85719.1	8.6	-9.4	20.91
PA	4229392	Glasgow borough	60	93.3	15	0.5	50931	1588	2251.6	10.3	-8.1	24.15
PA	4229432	Glassport borough	4483	1091.7	2339	32.1	6478098	25604	194768.1	10.5	-7.8	20.97
PA	4229496	Glenburn CDP	953	209.2	361	11.0	1217666	29273	59495.3	8.1	-10.1	18.69
PA	4229512	Glen Campbell borough	245	80.6	113	2.5	375724	10756	17791.3	8.4	-9.6	22.27
PA	4229568	Glendon borough	440	160.0	149	3.3	423505	7352	17775.3	10.2	-7.7	24.15
PA	4229592	Glenfield borough	205	292.0	125	1.5	315204	13275	12939.9	10.4	-7.8	21.84
PA	4229632	Glen Hope borough	142	25.3	48	1.3	162793	9773	7841.0	8.2	-9.8	26.92
PA	4229680	Glen Lyon CDP	1873	197.6	1286	22.9	2787279	10675	103281.4	8.8	-9.0	20.74
PA	4229720	Glenolden borough	7153	3071.6	3148	103.4	7429283	23599	192185.8	12.4	-4.6	24.15
PA	4229732	Glen Osborne borough	547	745.9	184	3.9	596855	8609	24970.8	10.5	-7.7	21.84
PA	4229760	Glen Rock borough	2025	626.1	805	12.7	2087696	15890	79673.4	11.0	-6.7	24.15
PA	4229800	Glenshaw CDP	8981	1070.4	3825	140.8	13604297	65888	594126.7	10.0	-8.1	22.32
PA	4229808	Glenside CDP	8384	2187.5	3260	172.3	9738070	31719	391396.8	11.7	-5.5	24.15
PA	4230013	Gold Key Lake CDP	1830	195.3	872	13.7	2864041	41300	99399.7	7.6	-11.0	24.60
PA	4230016	Goldsboro borough	952	461.1	343	6.0	1036860	9819	40297.7	11.5	-6.0	24.15
PA	4230096	Goodville CDP	482	92.1	63	7.2	286315	9208	11658.0	10.7	-7.2	24.15
PA	4230128	Gordon borough	763	176.8	382	9.1	1016344	8868	46183.5	8.9	-9.3	21.22
PA	4230136	Gordonville CDP	508	297.1	179	3.3	355419	6706	14043.3	11.0	-6.7	24.15
PA	4230192	Gouglersville CDP	548	139.7	176	6.5	594428	17357	26483.9	10.1	-7.5	24.15
PA	4230200	Gouldsboro CDP	890	64.7	433	10.9	1454692	20898	70781.1	6.7	-11.5	28.75
PA	4230224	Graceton CDP	257	280.8	99	2.6	219679	2752	9933.9	9.4	-9.2	25.22
PA	4230280	Grampian borough	356	289.9	158	3.1	502722	5617	24458.0	7.9	-9.8	23.16
PA	4230435	Grantley CDP	3628	615.4	754	80.2	3348846	28648	95710.2	11.0	-6.5	24.15
PA	4230472	Granville CDP	440	105.4	206	4.8	569177	9775	23457.4	10.4	-7.9	18.65
PA	4230512	Grapeville CDP	538	882.0	162	6.9	550762	3180	25596.8	9.7	-8.5	25.06
PA	4230528	Grassflat CDP	511	106.7	191	4.5	630033	11851	30419.2	8.1	-9.4	22.57
PA	4230600	Gratz borough	765	65.6	383	7.5	982830	18672	42627.5	9.8	-8.1	22.18
PA	4230704	Grazierville CDP	665	171.4	194	8.3	715738	9078	33575.9	9.3	-8.4	25.19
PA	4230728	Great Bend borough	734	616.2	409	10.3	1066536	6064	50610.7	8.2	-10.2	23.57
PA	4230896	Greencastle borough	3996	750.1	1905	21.6	4599737	32478	94964.6	11.1	-6.8	24.15
PA	4231038	Greenfields CDP	1170	1227.6	432	14.2	1424709	12903	59401.8	10.7	-7.1	24.15
PA	4231082	Green Hills borough	29	55.2	6	0.3	23343	2631	1096.4	9.9	-8.2	26.98
PA	4231088	Green Lane borough	508	339.7	189	3.1	470895	5989	18971.1	10.8	-6.9	24.15
PA	4231120	Greenock CDP	2195	559.3	1014	24.2	2805281	16608	95642.9	10.4	-8.0	19.84
PA	4231192	Greensboro borough	260	206.2	123	3.2	402112	3117	16657.8	10.9	-6.9	21.14
PA	4231200	Greensburg city	14892	1496.3	8141	900.0	29641906	82512	1507302.7	9.8	-8.5	28.78
PA	4231208	Greens Landing CDP	894	84.0	114	9.4	474774	25107	22315.1	8.3	-9.7	24.12
PA	4231256	Green Tree borough	4432	1294.9	2032	306.5	10946941	42196	492366.8	10.0	-8.0	21.48
PA	4231328	Greenville borough	5919	982.3	2590	143.3	8772751	38767	409448.6	8.9	-9.4	24.03
PA	4231368	Greenwood CDP	2458	554.5	906	73.3	3228334	21970	100501.7	9.1	-8.9	25.48

PA	4231536	Grier City CDP	241	245.5	44	2.9	174056	2995	8679.2	8.4	-9.1	20.96
PA	4231568	Grill CDP	1468	276.5	634	17.4	1991447	13910	81110.6	10.7	-7.2	24.15
PA	4231592	Grindstone CDP	498	210.2	260	4.8	754851	10041	31110.3	10.6	-7.3	23.97
PA	4231656	Grove City borough	8322	917.7	2330	195.7	8255454	41978	409785.4	8.7	-9.5	27.54
PA	4231716	Guilford CDP	2138	372.2	108	4.2	383771	11347	95811.3	10.7	-6.9	24.15
PA	4231840	Guys Mills CDP	124	102.0	30	1.3	106865	3019	5296.6	8.0	-10.0	26.13
PA	4232024	Halfway House CDP	2881	596.3	1051	32.1	3398895	33322	94151.1	10.7	-7.0	24.15
PA	4232032	Halifax borough	841	146.1	376	8.2	843741	5022	34891.2	10.6	-7.2	22.91
PA	4232056	Hallam borough	2673	293.5	1345	16.7	2872369	13067	95734.2	11.3	-6.5	24.15
PA	4232080	Hallstead borough	1303	636.9	638	18.3	1758296	8335	84545.4	8.2	-10.4	23.66
PA	4232120	Hamburg borough	4289	667.3	1960	55.9	4727675	34843	193463.9	10.0	-8.1	24.15
PA	4232320	Hampton CDP	632	303.6	204	3.9	509800	5123	19996.2	11.2	-6.5	24.15
PA	4232384	Hannasville CDP	176	31.2	68	1.1	214098	15127	9971.9	8.4	-9.6	26.33
PA	4232448	Hanover borough	15289	1605.6	7053	600.0	22034016	77608	977649.3	11.2	-6.5	24.15
PA	4232600	Harleigh CDP	1104	427.5	492	17.9	1564579	9382	73403.4	7.6	-9.7	20.70
PA	4232616	Harleysville CDP	9286	724.4	3748	183.9	10442544	66102	386113.6	10.9	-6.6	24.15
PA	4232656	Harmonsburg CDP	401	83.3	68	4.1	259206	7911	12881.1	8.4	-9.6	25.50
PA	4232688	Harmony borough	890	482.7	381	9.9	1106377	8135	48966.7	9.7	-8.5	24.33
PA	4232800	Harrisburg city	49528	1818.7	25649	1376.0	55831693	176480	2257794.4	11.2	-6.2	24.15
PA	4232864	Harrison City CDP	134	687.5	48	1.4	97204	1270	4240.0	9.9	-8.4	22.92
PA	4232896	Harrisville borough	897	277.1	286	10.0	914163	12239	43953.1	8.6	-9.6	27.63
PA	4232936	Hartleton borough	283	59.3	90	3.3	320988	8609	14735.2	10.1	-8.1	24.45
PA	4232976	Hartstown CDP	201	42.8	45	2.1	153517	6516	7387.7	8.6	-9.4	24.69
PA	4233000	Harveys Lake borough	2791	197.5	1622	34.1	5231441	46379	205544.8	7.9	-9.8	21.11
PA	4233024	Harwick CDP	899	1107.3	452	6.4	1234728	8852	50637.4	10.0	-8.4	22.21
PA	4233072	Hasson Heights CDP	1351	321.1	560	8.2	1745799	15770	83102.9	8.0	-10.1	26.16
PA	4233080	Hastings borough	1278	551.9	500	16.9	1612588	12307	82166.0	8.0	-10.1	23.34
PA	4233088	Hatboro borough	7360	1785.2	3133	227.1	10070023	32284	390603.1	11.5	-5.8	24.15
PA	4233112	Hatfield borough	3290	1189.8	1375	20.0	2905570	13378	97989.2	11.0	-6.4	24.15
PA	4233154	Haverford College CDP	1331	2746.2	154	20.8	372809	5549	17096.3	11.7	-5.1	24.15
PA	4233184	Hawk Run CDP	534	168.3	235	4.7	688144	9396	32596.2	8.3	-9.6	25.22
PA	4233200	Hawley borough	1211	393.3	538	14.8	1396776	13475	68443.4	7.9	-11.1	25.60
PA	4233216	Hawthorn borough	494	168.9	220	7.7	767632	10511	37620.0	8.6	-10.0	21.88
PA	4233312	Haysville borough	70	224.6	42	0.5	133553	2189	5513.7	10.4	-7.7	21.84
PA	4233408	Hazleton city	25340	1268.9	11763	643.0	32376407	101227	1649256.0	7.5	-9.8	20.71
PA	4233504	Hebron CDP	1305	1075.3	162	12.0	552874	4640	24419.3	10.5	-7.4	24.15
PA	4233528	Heckscherville CDP	220	56.2	104	2.6	287044	4244	12947.3	9.1	-8.9	21.64
PA	4233576	Hegins CDP	812	94.7	329	9.7	1026254	19132	45534.4	9.6	-8.5	21.98
PA	4233592	Heidelberg borough	1244	1104.0	640	8.9	1856645	7136	76274.0	10.5	-7.9	21.77
PA	4233632	Heidlersburg CDP	707	95.2	116	7.1	398950	8461	16699.4	11.0	-6.6	24.15
PA	4233672	Heilwood CDP	711	64.4	306	7.2	997824	23126	47924.0	8.2	-9.8	35.00
PA	4233744	Hellertown borough	5898	1330.5	2759	117.9	8072978	28994	296096.5	10.5	-7.4	24.15
PA	4233772	Hemlock Farms CDP	3271	103.1	3051	74.8	10491894	101179	513566.9	7.4	-11.2	25.42
PA	4233840	Hendersonville CDP	325	63.8	137	7.6	513527	6776	22672.2	10.0	-7.8	25.40
PA	4234008	Hereford CDP	930	116.3	134	12.1	601212	12230	27033.8	10.5	-7.3	24.15
PA	4234048	Herminie CDP	789	623.2	345	6.2	943672	5784	39781.9	10.2	-8.1	22.45
PA	4234064	Hermitage city	16220	230.0	7647	553.0	27271395	232187	1416455.0	9.0	-9.0	32.53
PA	4234080	Herndon borough	324	98.7	200	3.2	567679	10235	23685.4	10.2	-7.8	21.37
PA	4234144	Hershey CDP	14257	348.3	6273	316.2	16377383	169620	662244.6	10.9	-6.7	24.15
PA	4234256	Hickory CDP	740	63.4	362	8.2	1143094	15900	49570.6	9.8	-8.2	31.26
PA	4234308	Hickory Hills CDP	562	89.6	671	6.9	2109961	20878	101604.2	7.7	-9.7	21.45
PA	4234592	Highland Park CDP	1380	728.0	614	22.6	1914934	13739	81448.6	10.5	-7.6	19.32
PA	4234664	Highspire borough	2399	911.1	1294	23.4	2691414	17201	95751.6	11.4	-6.0	24.15
PA	4234776	Hilldale CDP	1246	917.8	598	37.3	2110221	11493	100666.0	9.2	-8.9	20.88
PA	4234784	Hiller CDP	1155	259.7	616	6.5	1678977	16495	64338.3	10.6	-7.3	24.55
PA	4235120	Hokendauqua CDP	3378	897.6	1549	82.9	4756150	24020	196255.9	10.5	-7.2	24.15
PA	4235172	Holiday Pocono CDP	476	40.5	463	5.4	1466984	30315	72601.7	7.4	-10.4	24.87

PA	4235224	Hollidaysburg borough	5791	861.9	3015	178.7	9357355	40058	403499.8	9.8	-7.9	24.69
PA	4235364	Homeacre-Lyndora CDP	6906	480.0	3260	136.5	10069340	95311	394492.8	9.1	-9.0	24.54
PA	4235408	Homer City borough	1707	864.9	801	17.2	2420419	12149	99541.3	9.5	-9.0	31.72
PA	4235424	Homestead borough	3165	2580.3	1840	22.6	3809962	11607	97745.3	10.4	-7.9	19.78
PA	4235448	Hometown CDP	1349	210.2	643	16.1	1996179	26810	82474.4	8.7	-9.0	21.22
PA	4235488	Homewood borough	109	143.1	66	0.8	196021	3828	8444.4	9.9	-8.3	28.72
PA	4235520	Honesdale borough	4480	345.0	2328	376.0	10010350	46749	523813.4	7.7	-11.2	23.17
PA	4235528	Honey Brook borough	1713	511.7	575	10.2	1480210	9588	51192.5	10.4	-7.1	24.15
PA	4235576	Hookstown borough	147	154.0	58	1.1	192418	2574	8443.3	9.9	-8.2	28.14
PA	4235608	Hooversville borough	645	300.6	315	7.9	859184	9845	40538.7	8.5	-9.6	28.78
PA	4235624	Hop Bottom borough	337	120.5	139	4.7	404490	8231	19715.9	8.0	-10.1	23.50
PA	4235632	Hopeland CDP	738	215.8	241	7.4	796866	9151	32496.3	10.7	-7.2	24.15
PA	4235648	Hopewell borough	230	90.5	107	2.9	323168	2721	14099.1	10.0	-8.1	22.91
PA	4235728	Hopwood CDP	2090	330.2	878	27.6	2798297	26152	93972.6	10.1	-8.2	25.78
PA	4235800	Horsham CDP	14842	1115.9	5897	415.4	18779894	100435	673513.6	11.4	-5.7	24.15
PA	4235872	Hostetter CDP	740	274.5	336	6.3	1051326	10049	47736.0	9.7	-8.7	28.62
PA	4235888	Houserville CDP	1814	542.9	884	78.5	3830946	17578	100739.9	9.6	-8.1	20.53
PA	4235896	Houston borough	1296	585.4	642	14.3	1653678	7899	66997.3	10.2	-8.0	28.96
PA	4235928	Houtzdale borough	797	389.4	326	7.1	959072	9670	46852.2	7.9	-9.7	27.64
PA	4235960	Howard borough	720	385.0	316	7.4	938487	5826	41037.1	9.7	-8.4	18.26
PA	4236096	Hudson CDP	1443	837.9	738	43.1	2680017	7623	102598.4	9.2	-8.9	20.98
PA	4236152	Hughestown borough	1392	544.1	599	17.0	1914244	12013	84183.6	9.1	-9.1	21.05
PA	4236160	Hughesville borough	2128	863.1	929	31.1	2506023	14763	98647.7	9.5	-8.9	24.36
PA	4236192	Hulmeville borough	1003	893.6	390	8.9	1111780	7424	43368.2	11.6	-5.7	24.15
PA	4236232	Hummelstown borough	4538	950.6	2158	44.2	5676732	28066	193836.9	11.1	-6.5	24.15
PA	4236240	Hummels Wharf CDP	1353	363.7	762	18.6	2388092	17730	96400.2	10.1	-8.1	20.93
PA	4236288	Hunker borough	291	185.8	117	3.3	405437	4000	17627.6	10.1	-8.1	22.58
PA	4236352	Hunterstown CDP	547	53.1	135	13.0	621922	11295	27815.4	11.0	-6.6	24.15
PA	4236368	Huntingdon borough	7093	713.6	3106	263.0	10479467	47713	503148.7	10.2	-7.5	22.31
PA	4236568	Hyde CDP	1399	295.2	432	26.6	1418526	18772	68330.3	8.4	-9.6	26.73
PA	4236576	Hyde Park CDP	2528	1351.7	995	61.7	2621483	12300	96724.9	10.6	-7.6	24.15
PA	4236592	Hyde Park borough	500	487.2	257	5.6	810035	5540	35438.0	9.9	-8.9	17.10
PA	4236616	Hydetown borough	526	74.4	206	5.4	596596	13375	29109.2	7.9	-10.4	25.46
PA	4236640	Hyndman borough	910	367.2	474	11.6	1474510	10673	62032.0	10.5	-8.5	25.57
PA	4236712	Idaville CDP	177	68.4	81	1.8	268850	3190	11107.1	10.5	-7.1	24.15
PA	4236768	Imperial CDP	2541	294.4	1085	31.2	3088002	41352	92757.9	10.0	-7.9	21.43
PA	4236816	Indiana borough	13975	2469.4	5609	371.0	16139290	42292	727142.8	9.0	-9.0	29.61
PA	4236888	Indian Lake borough	394	46.6	586	4.8	1771184	32042	82588.4	7.8	-9.9	26.44
PA	4236904	Indian Mountain Lake CDP	4372	158.2	3050	12.9	9309354	104191	419536.4	7.3	-9.9	24.32
PA	4236944	Industry borough	1835	82.1	791	14.2	2575674	51970	90104.3	9.9	-8.0	27.08
PA	4237000	Ingram borough	3330	2917.4	1618	23.8	4092689	11284	98852.4	10.3	-7.8	21.49
PA	4237008	Inkerman CDP	1819	508.0	427	22.2	1215868	11176	51802.1	9.0	-9.0	20.85
PA	4237016	Intercourse CDP	1274	165.5	453	8.3	1290873	17886	47711.0	11.0	-6.7	24.15
PA	4237024	Iola CDP	144	144.2	44	1.8	107416	3246	4982.7	9.2	-8.9	21.00
PA	4237192	Irvona borough	647	164.3	252	5.7	830607	11186	39469.0	8.3	-9.7	23.90
PA	4237208	Irwin borough	3973	1404.8	2268	44.5	4795709	20984	197414.5	10.1	-8.2	23.07
PA	4237304	Ivyland borough	1041	597.6	293	9.3	930925	7189	37561.6	11.3	-5.9	24.15
PA	4237496	Jackson Center borough	224	68.6	70	3.2	242364	5814	11705.0	8.5	-9.7	28.98
PA	4237545	Jacksonville CDP	637	43.9	41	6.4	224296	2138	11721.5	9.4	-8.5	17.42
PA	4237584	Jacksonwald CDP	3393	551.1	1069	41.7	3960144	26247	97494.4	10.6	-7.0	24.15
PA	4237640	Jacobus borough	1841	323.7	676	11.5	2148428	16146	80235.0	11.0	-6.6	24.15
PA	4237656	James City CDP	287	49.8	96	4.8	354889	6008	20219.4	6.6	-11.4	22.07
PA	4237696	Jamestown borough	617	227.5	301	8.8	870196	9014	40521.6	8.7	-9.5	23.98
PA	4237728	Jamison City CDP	134	50.2	118	1.6	376720	5066	17560.3	8.3	-9.6	21.88
PA	4237784	Jeannette city	9654	1425.4	5177	213.0	15612790	59088	701937.6	9.8	-8.5	25.32

PA	4237792	Jeddo borough	98	44.3	53	1.2	140657	1196	6926.2	7.6	-9.8	20.92
PA	4237880	Jefferson borough	270	307.9	117	3.3	777280	6896	16243.7	10.3	-7.4	27.21
PA	4237944	Jefferson borough	733	209.6	260	4.6	376056	4378	31137.2	10.9	-6.7	24.15
PA	4237955	Jefferson Hills borough	10619	286.2	4319	137.5	14105935	156709	659556.3	10.4	-7.7	21.71
PA	4238000	Jenkintown borough	4422	2348.0	2079	364.0	6923173	14979	294862.9	11.6	-5.4	24.15
PA	4238048	Jennerstown borough	695	125.6	273	8.5	897780	21034	43298.3	8.3	-9.6	30.11
PA	4238096	Jermyn borough	2169	679.4	994	25.1	2790090	14453	101190.4	8.2	-10.7	20.34
PA	4238104	Jerome CDP	1017	138.9	455	11.7	1352920	22742	63948.2	8.5	-9.3	28.43
PA	4238128	Jersey Shore borough	4361	900.1	1849	63.7	4709363	26938	197129.2	9.8	-8.4	26.87
PA	4238152	Jerseytown CDP	184	51.6	78	2.2	263172	6286	11942.7	9.3	-9.2	20.94
PA	4238160	Jessup borough	4676	181.6	2064	54.1	6220673	42908	311275.8	7.4	-11.3	25.35
PA	4238200	Jim Thorpe borough	4781	121.1	2129	54.1	5962759	66545	199740.5	8.7	-8.8	21.56
PA	4238240	Joffre CDP	536	125.1	196	5.9	616596	13473	27753.1	9.8	-8.3	28.60
PA	4238248	Johnsonburg borough	2483	332.8	1405	41.3	4470510	30368	213890.7	7.2	-11.0	30.56
PA	4238288	Johnstown city	20978	1343.3	12734	673.0	11387006	68515	1715503.2	9.6	-8.7	26.19
PA	4238392	Jonestown CDP	64	14.2	79	0.8	247331	5528	10987.4	9.0	-9.3	20.71
PA	4238400	Jonestown borough	1905	499.8	516	17.4	1526144	12731	64607.5	10.5	-7.3	24.15
PA	4238528	Julian CDP	152	80.5	64	1.6	186571	2773	8241.9	9.5	-8.3	21.80
PA	4238640	Juniata Terrace borough	542	379.4	273	5.9	593997	1891	24243.1	10.4	-8.0	19.16
PA	4238688	Kane borough	3730	739.6	1640	53.0	4723831	31535	217719.4	6.4	-11.5	21.29
PA	4238744	Kapp Heights CDP	863	1169.1	217	8.4	651928	6926	28789.1	9.9	-8.2	21.08
PA	4238768	Karns City borough	209	141.3	125	2.3	322249	3073	14802.2	8.8	-9.7	20.31
PA	4239056	Kelayres CDP	533	612.7	278	6.4	762163	2832	37770.8	7.5	-9.7	20.57
PA	4239224	Kempton CDP	169	56.9	71	2.2	242311	7183	10493.6	10.0	-8.0	24.15
PA	4239256	Kenhorst borough	2877	1036.9	1178	37.5	3614213	13889	98143.3	10.7	-7.2	24.15
PA	4239272	Kenilworth CDP	1907	320.1	854	46.3	2681115	22183	94709.0	10.9	-6.7	24.15
PA	4239280	Kenmar CDP	4124	437.6	2094	105.7	6634338	38966	295722.2	9.7	-8.8	26.65
PA	4239336	Kennerdell CDP	247	19.1	258	1.5	783175	18273	35284.3	8.6	-9.6	25.81
PA	4239352	Kennett Square borough	6072	1400.1	2122	270.7	8073664	25296	294775.5	11.6	-5.6	24.15
PA	4239504	Kerrtown CDP	305	165.5	128	8.1	384564	9454	19184.6	8.4	-9.6	25.21
PA	4239512	Kersey CDP	937	176.3	415	15.6	1349086	16505	71869.9	6.9	-10.9	22.82
PA	4239736	King of Prussia CDP	19936	816.1	9264	1064.1	28164107	152969	1134064.0	11.6	-5.8	24.15
PA	4239784	Kingston borough	13182	2230.3	6679	495.0	20359450	50525	1024402.2	9.4	-8.7	20.81
PA	4239944	Kirkwood CDP	396	57.5	86	2.6	278369	14613	11174.2	11.1	-6.4	24.15
PA	4239960	Kiskimere CDP	136	140.3	23	1.8	98105	5972	4932.8	9.7	-8.9	15.24
PA	4240016	Kistler borough	320	189.5	133	3.5	408229	3146	16681.0	10.6	-7.2	20.98
PA	4240040	Kittanning borough	4044	1229.1	1946	53.5	4547323	19372	168537.7	9.3	-9.2	21.85
PA	4240136	Klingerstown CDP	127	48.0	66	1.5	195522	3565	8372.0	10.0	-7.8	21.70
PA	4240272	Knox borough	1146	439.8	525	17.8	1582437	12027	79368.6	8.2	-10.2	27.21
PA	4240360	Knoxville borough	629	345.8	236	9.6	738455	6395	38151.7	7.7	-10.7	27.98
PA	4240400	Koppel borough	762	261.6	365	5.9	1075338	7918	46762.8	9.8	-8.3	29.12
PA	4240432	Kratzerville CDP	383	93.0	232	5.3	701609	8008	30057.2	9.9	-8.1	21.87
PA	4240464	Kreamer CDP	822	113.7	369	11.3	1188109	15417	48946.7	10.0	-8.0	22.26
PA	4240584	Kulpmont borough	2924	585.4	1455	28.5	3818767	17339	102630.3	8.8	-9.0	20.47
PA	4240608	Kulpsville CDP	8194	779.3	3384	95.1	8684915	58475	288228.8	11.1	-6.3	24.15
PA	4240656	Kutztown borough	5012	1072.4	2047	132.6	5864632	32265	197110.2	10.2	-7.6	24.15
PA	4240680	Kylertown CDP	340	62.9	189	3.0	592828	11888	28470.5	7.9	-9.5	23.38
PA	4240744	Laceyville borough	379	236.1	184	5.9	526597	4426	24935.2	8.9	-9.3	24.76
PA	4240848	Laflin borough	1487	380.1	657	18.2	2095732	18182	98022.5	8.9	-9.5	21.30
PA	4240948	Lake Arthur Estates CDP	594	211.4	34	6.6	207841	8097	11459.5	9.0	-9.1	28.28
PA	4240960	Lake City borough	3031	527.7	1110	17.7	3337278	25578	102053.9	9.0	-8.2	24.15
PA	4240981	Lake Heritage CDP	1333	413.2	706	13.4	2310471	14765	91111.1	11.1	-6.6	24.15
PA	4240982	Lake Latonka CDP	1012	138.6	532	14.4	1815424	37316	85045.7	8.7	-9.6	28.66
PA	4240988	Lake Meade CDP	2563	478.2	1169	15.9	3752944	27486	95043.7	11.1	-6.5	24.15
PA	4240992	Lakemont CDP	1868	505.6	853	55.7	3027118	25685	99764.1	9.4	-8.0	24.94

PA	4241080	Lake Winola CDP	748	130.6	564	11.7	1755492	13652	84093.1	8.3	-9.4	20.31
PA	4241099	Lake Wynonah CDP	2640	193.1	1161	31.5	3982793	52964	95166.1	9.5	-8.5	24.15
PA	4241104	Lamar CDP	562	77.3	313	5.8	996863	11689	43730.9	9.5	-8.9	18.91
PA	4241192	Lampeter CDP	1669	234.4	574	21.4	1768631	17476	74188.5	11.0	-6.6	24.15
PA	4241216	Lancaster city	59322	2811.1	23914	1413.0	54706695	142031	2262213.1	11.1	-6.6	24.15
PA	4241264	Landingville borough	159	50.0	73	1.9	227116	6423	9878.7	9.8	-8.2	24.15
PA	4241272	Landisburg borough	218	47.3	89	2.3	270600	1803	11345.9	10.6	-7.2	23.36
PA	4241304	Landisville CDP	1893	591.9	740	46.0	2844043	20190	95275.6	11.0	-6.8	24.15
PA	4241336	Lanesboro borough	506	68.5	260	7.1	706085	13674	34914.7	7.6	-11.2	24.04
PA	4241376	Langeloth CDP	717	216.6	241	7.9	852973	12361	39090.3	9.6	-8.4	28.96
PA	4241392	Langhorne borough	1622	1247.9	594	14.5	1494252	9921	59307.7	11.3	-5.8	24.15
PA	4241416	Langhorne Manor borough	1442	1327.6	315	12.9	1053108	11746	42961.4	11.4	-5.7	24.15
PA	4241432	Lansdale borough	16269	1927.0	7024	436.0	17539216	67547	687866.4	11.0	-6.3	24.15
PA	4241440	Lansdowne borough	10620	3261.7	4796	135.5	11293899	30229	389991.2	12.2	-4.8	24.15
PA	4241464	Lansford borough	3941	1214.1	2128	44.6	4978559	19807	208479.1	8.5	-9.1	21.32
PA	4241512	Laporte borough	316	67.2	303	5.5	984272	14232	50380.2	7.1	-10.4	24.49
PA	4241608	Larksville borough	4480	609.8	1924	54.7	5875913	45624	201722.5	9.0	-8.7	20.76
PA	4241680	Latrobe city	8338	1268.9	4096	516.0	16819585	48383	800009.0	9.9	-8.6	23.65
PA	4241700	Lattimer CDP	554	306.8	216	9.0	644413	4686	33294.7	7.5	-9.7	20.71
PA	4241768	Laureldale borough	3911	1202.8	1830	51.0	5235152	17983	197472.1	10.4	-7.7	24.15
PA	4241834	Laurel Mountain borough	167	79.1	128	1.9	413841	2812	18584.5	9.1	-9.9	32.22
PA	4241848	Laurel Run borough	500	46.7	124	6.1	462296	13131	23968.6	7.7	-10.2	21.42
PA	4241856	Laurelton CDP	221	106.1	90	2.6	300050	4710	13460.6	10.1	-8.7	24.41
PA	4241880	Laurys Station CDP	1243	289.6	340	16.5	1294769	18889	60028.3	10.2	-7.6	24.15
PA	4241904	Lavelle CDP	742	130.3	515	5.2	1565508	15582	66720.4	9.1	-8.9	21.05
PA	4241944	Lawnton CDP	3813	856.9	1724	96.8	4949225	23927	195699.5	11.1	-6.3	24.15
PA	4241968	Lawrence CDP	540	390.8	149	12.6	631969	4834	28303.2	10.2	-7.8	24.14
PA	4241992	Lawrence Park CDP	3982	1149.8	1515	45.4	4653168	26564	207941.4	9.1	-8.0	23.63
PA	4242016	Lawrenceville borough	581	189.6	269	8.9	743021	7492	36828.6	8.2	-10.2	24.51
PA	4242032	Lawson Heights CDP	2194	575.7	1001	18.8	2978227	28023	95364.7	9.8	-8.8	25.17
PA	4242084	Leola CDP	7214	403.0	2573	180.3	7890191	67654	284454.4	10.9	-6.8	24.15
PA	4242168	Lebanon city	25477	2272.2	11979	559.0	27622206	98912	1186890.3	10.5	-7.4	24.15
PA	4242192	Lebanon South CDP	2270	579.3	927	20.8	2772306	17390	96581.5	10.5	-7.4	24.15
PA	4242280	Leechburg borough	2156	1256.5	1116	28.5	3125998	11451	82865.4	9.7	-8.9	17.94
PA	4242328	Leeper CDP	158	38.2	101	2.4	339916	4169	17276.1	7.6	-10.7	24.25
PA	4242352	Leesport borough	1918	629.4	746	25.0	2170324	15106	81224.4	10.5	-7.4	24.15
PA	4242392	Leetsdale borough	1218	382.6	616	8.7	1542198	16302	63538.1	10.4	-7.8	22.18
PA	4242472	Lehighton borough	5500	1021.0	2589	170.9	7614123	33724	299608.0	9.8	-8.1	21.64
PA	4242596	Leith-Hatfield CDP	2546	452.2	1127	61.3	4360011	30416	194745.6	10.4	-7.5	24.38
PA	4242632	Lemont CDP	2270	406.9	1001	98.2	3913718	23989	100510.6	9.4	-8.2	20.38
PA	4242640	Lemont Furnace CDP	827	191.2	352	10.9	1090609	11368	48230.8	9.9	-8.7	25.84
PA	4242648	Lemoyne borough	4553	1348.4	2361	27.6	4715124	36764	95270.7	11.2	-6.2	24.15
PA	4242672	Lenape Heights CDP	1167	380.3	511	15.4	1719081	16048	80819.8	9.2	-9.2	19.98
PA	4242688	Lenhartsville borough	165	231.0	79	2.2	200043	1654	8496.2	10.2	-8.0	24.15
PA	4242704	Lenkerville CDP	550	333.6	264	5.4	671020	6772	28080.2	10.4	-7.4	22.52
PA	4242824	Le Raysville borough	290	84.6	141	4.1	459989	6358	23413.2	7.6	-9.9	23.73
PA	4242912	Level Green CDP	4020	370.7	1465	41.8	5010440	45556	192161.3	9.9	-8.4	30.86
PA	4242928	Levittown CDP	52983	1905.2	19439	864.0	67102053	245857	2625068.0	11.6	-5.5	24.15
PA	4242968	Lewisberry borough	362	139.2	164	2.3	498135	3595	19503.4	11.2	-6.3	24.15
PA	4242976	Lewisburg borough	5792	1838.2	1885	224.0	6317815	22583	303725.5	10.0	-8.1	22.87
PA	4242984	Lewis Run borough	617	83.5	251	8.8	820474	11305	45003.9	6.6	-11.7	24.78
PA	4243000	Lewistown borough	8338	1073.5	4278	252.0	11811107	45643	486886.8	10.5	-7.8	19.52
PA	4243064	Liberty borough	2551	642.0	1093	18.2	3481624	20036	96429.4	10.4	-7.8	20.60
PA	4243128	Liberty borough	249	95.2	113	3.8	354072	6073	18348.8	7.5	-10.2	28.89
PA	4243224	Lightstreet CDP	1093	263.4	317	13.4	1129354	13553	50377.6	9.3	-8.7	20.31
PA	4243232	Ligonier borough	1573	686.4	876	17.6	2308234	12409	99235.4	9.7	-8.6	29.94

PA	4243248	Lilly borough	968	359.7	406	12.8	1298953	9555	53942.7	8.1	-9.9	24.86
PA	4243272	Lima CDP	2735	766.8	1033	61.1	1812071	21299	73942.4	11.7	-5.2	24.15
PA	4243320	Lime Ridge CDP	890	191.5	329	10.9	1056484	16242	47423.6	9.5	-8.6	20.29
PA	4243408	Lincoln borough	1072	132.1	480	7.7	1553813	30465	60569.2	10.2	-7.8	21.39
PA	4243496	Lincoln Park CDP	1615	1428.3	705	21.3	1766595	7713	66995.4	10.6	-7.2	24.15
PA	4243544	Lincoln University CDP	1726	778.9	4	15.1	268699	3724	12700.9	11.2	-6.1	24.15
PA	4243552	Lincolnville CDP	96	42.2	60	1.0	192211	3705	9200.4	7.9	-10.1	28.05
PA	4243656	Linesville borough	1040	374.6	524	10.7	1328846	11435	61719.6	8.5	-9.5	24.40
PA	4243672	Linglestown CDP	6334	637.8	2655	133.6	9622088	60979	390355.2	10.8	-6.6	24.15
PA	4243704	Linntown CDP	1489	808.7	856	18.7	2581940	16704	98311.5	10.0	-8.1	22.87
PA	4243720	Linwood CDP	3281	1286.8	49	0.6	155528	3408	95602.5	12.5	-4.5	24.15
PA	4243747	Lionville CDP	6189	1021.9	2627	167.0	7111411	47795	288707.2	10.9	-6.4	24.15
PA	4243816	Lititz borough	9369	1281.7	3960	172.0	10489917	49427	391130.9	10.8	-7.0	24.15
PA	4243828	Little Britain CDP	372	88.9	79	2.4	272989	11526	10836.4	11.3	-6.2	24.15
PA	4243928	Little Meadows borough	273	40.6	134	3.8	417478	10128	20624.7	7.7	-10.1	22.92
PA	4243944	Littlestown borough	4434	954.6	1823	44.7	5047826	30352	191177.7	11.1	-6.6	24.15
PA	4243968	Liverpool borough	955	201.5	450	10.3	1161666	11638	48378.9	10.6	-7.3	22.27
PA	4244128	Lock Haven city	9772	1078.7	3477	235.0	8818188	48793	392245.8	9.8	-8.6	22.00
PA	4244224	Locustdale CDP	177	113.3	56	2.2	160424	1793	7439.5	9.0	-8.8	20.85
PA	4244400	Loganton borough	468	81.3	170	4.9	566389	7855	26212.8	8.9	-9.3	24.68
PA	4244416	Loganville borough	1240	207.6	447	7.8	1382372	11547	55819.5	10.8	-6.6	24.15
PA	4244512	Long Branch borough	447	65.0	225	4.9	746879	19584	31954.3	10.3	-7.3	24.91
PA	4244528	Longfellow CDP	215	25.4	62	2.4	214744	6924	9281.5	9.8	-8.3	18.67
PA	4244664	Lorain borough	759	635.4	314	10.1	1035502	6037	48900.2	9.1	-9.0	24.98
PA	4244672	Lorane CDP	4236	586.1	1453	52.1	4512094	30637	191465.8	10.9	-6.9	24.15
PA	4244704	Loretto borough	1302	474.7	140	17.3	572245	12281	32974.0	8.1	-9.5	25.94
PA	4244824	Lower Allen CDP	6694	947.3	3276	184.8	9879097	43289	389564.8	11.3	-6.2	24.15
PA	4244864	Lower Burrell city	11761	402.2	5035	238.3	16945470	129253	778015.1	9.7	-8.8	22.53
PA	4245192	Loyalhanna CDP	3428	421.0	1555	29.0	4665271	38891	192962.0	9.6	-8.7	24.90
PA	4245312	Lucerne Mines CDP	937	337.3	437	9.5	1307845	13651	58098.0	9.5	-8.9	34.12
PA	4245448	Lumber City borough	76	9.7	42	0.7	135683	15187	6366.4	8.3	-9.7	27.16
PA	4245452	Lumber City CDP	255	28.4	116	2.8	381116	3155	15921.7	10.2	-7.9	18.91
PA	4245568	Luzerne borough	2845	1747.4	1373	34.7	3426760	13742	102468.7	9.2	-8.6	20.67
PA	4245592	Lykens borough	1779	157.6	888	17.3	2515811	13900	99876.7	9.7	-8.0	22.45
PA	4245732	Lynnwood-Pricedale CDP	2031	588.1	942	30.9	3122536	23707	95108.5	10.6	-7.5	20.78
PA	4245752	Lyons borough	478	347.6	183	6.2	498633	5382	21232.6	10.2	-7.7	24.15
PA	4245824	McAdoo borough	2300	573.2	1286	27.5	3207110	8577	111298.0	7.4	-9.7	20.62
PA	4245848	McAlisterville CDP	971	183.8	275	12.1	782835	16087	33883.5	10.2	-7.9	23.38
PA	4245992	McClure borough	941	87.9	377	13.0	1127917	19812	47138.3	9.9	-8.7	24.58
PA	4246000	McConnellsburg borough	1220	656.7	578	15.5	1305538	7572	51096.3	10.3	-7.7	24.89
PA	4246016	McConnellstown CDP	1194	86.8	499	11.1	1573984	28079	66743.1	10.2	-7.5	22.85
PA	4246072	McDonald borough	2149	732.3	1107	23.7	2931230	11525	100257.6	10.0	-8.1	23.52
PA	4246112	McElhattan CDP	598	165.0	175	6.2	574221	18167	25466.7	9.8	-8.8	24.13
PA	4246120	McEwensville borough	279	130.6	114	2.7	363612	2721	15857.4	9.8	-8.3	23.09
PA	4246160	McGovern CDP	2742	441.6	1247	40.2	4002999	25938	97116.6	10.1	-8.0	30.11
PA	4246216	McKean borough	388	173.2	171	2.3	448167	4650	20616.2	8.5	-9.3	23.00
PA	4246232	McKeansburg CDP	163	113.0	86	1.9	267955	5240	11777.7	9.5	-8.4	24.15
PA	4246256	McKeesport city	19731	1858.5	10739	350.0	31899631	115003	1374406.8	10.4	-7.8	20.18
PA	4246264	McKees Rocks borough	6104	1794.9	3473	146.0	8845183	25690	291165.4	10.6	-7.8	21.65
PA	4246312	McKnightstown CDP	226	74.0	91	1.8	297404	7407	12005.3	10.9	-6.7	24.15
PA	4246344	McMurray CDP	4647	568.1	1601	126.5	7041611	50088	292826.8	10.1	-7.9	25.15
PA	4246376	McSherrystown borough	3038	1058.8	1282	30.6	3305901	12292	96913.7	11.2	-6.6	24.15
PA	4246392	Macungie borough	3074	799.8	1462	25.5	3088871	16029	98372.3	10.3	-7.4	24.15
PA	4246400	McVeytown borough	342	484.0	155	3.7	425485	2295	17331.9	10.6	-7.3	19.46

PA	4246488	Madison borough	397	188.4	181	4.4	609563	4342	26554.1	10.0	-8.0	23.73
PA	4246504	Madisonburg CDP	168	118.4	49	1.7	175181	1661	8142.9	9.0	-8.9	18.82
PA	4246568	Mahaffey borough	368	146.2	179	3.3	576773	7325	26993.5	8.4	-9.8	25.27
PA	4246592	Mahanoy City borough	4162	1349.2	2577	49.7	5490162	11572	212937.9	8.3	-9.5	20.97
PA	4246720	Mainville CDP	132	39.7	54	1.6	177868	4944	8062.0	9.3	-8.8	20.09
PA	4246728	Maitland CDP	357	27.3	83	5.9	348880	9720	18820.6	9.9	-8.3	20.60
PA	4246792	Malvern borough	2998	689.3	1446	17.9	3070774	20722	96786.4	11.0	-6.2	24.15
PA	4246800	Mammoth CDP	525	96.1	235	11.4	852783	15298	39232.0	9.6	-8.9	31.77
PA	4246864	Manchester borough	2763	749.8	1091	17.3	2590337	16992	95651.0	11.2	-6.3	24.15
PA	4246888	Manheim borough	4858	1029.7	1963	31.5	5035167	29615	192295.5	10.9	-7.0	24.15
PA	4246944	Manns Choice borough	300	82.7	100	3.8	330789	5062	15056.8	9.7	-8.4	28.03
PA	4247000	Manor borough	3239	516.2	1233	36.3	4043482	26615	97757.3	10.0	-8.4	23.31
PA	4247064	Manorville borough	410	862.5	189	5.4	589192	2995	27166.3	9.5	-9.3	19.85
PA	4247080	Mansfield borough	3625	582.5	1265	55.6	3175448	29039	102560.7	8.0	-10.1	24.16
PA	4247152	Maple Glen CDP	6742	828.8	2353	182.7	9094708	51366	388080.1	11.3	-5.7	24.15
PA	4247248	Mapleton borough	441	292.6	206	4.1	621123	4213	26198.1	10.2	-7.5	21.64
PA	4247264	Mapletown CDP	130	51.2	61	1.6	210340	2707	8846.4	10.7	-7.0	19.40
PA	4247344	Marcus Hook borough	2397	361.7	1020	9.8	1842169	10342	64500.1	12.5	-4.5	24.15
PA	4247400	Marianna borough	494	108.9	219	5.5	725535	13774	31334.7	10.2	-7.7	27.63
PA	4247404	Marianne CDP	1167	254.4	287	18.1	1109924	15230	59542.6	8.1	-10.3	26.49
PA	4247416	Marienville CDP	3137	32.2	502	30.6	1899534	34833	101229.3	7.3	-10.7	22.95
PA	4247424	Marietta borough	2588	1156.0	1118	16.8	2353088	17064	90678.1	11.4	-6.5	24.15
PA	4247464	Marion CDP	953	145.4	275	15.4	1034102	18365	43335.7	11.0	-6.8	24.15
PA	4247472	Marion Center borough	451	124.6	159	4.6	460048	7915	21840.8	8.6	-9.8	22.14
PA	4247480	Marion Heights borough	611	531.2	341	6.0	993331	4714	45582.7	8.6	-9.0	20.35
PA	4247544	Marklesburg borough	204	46.1	152	1.9	441347	7199	18501.7	10.1	-7.4	23.36
PA	4247560	Markleysburg borough	284	112.8	84	2.7	295098	4170	14034.7	8.7	-9.0	29.23
PA	4247600	Marlin CDP	661	202.7	281	7.9	782307	12430	34899.1	9.4	-8.6	22.00
PA	4247672	Mars borough	1699	773.8	748	19.0	1864569	10476	82758.0	9.7	-8.6	23.01
PA	4247736	Marshallton CDP	1441	390.4	754	12.4	2048180	12630	84032.9	9.4	-8.9	20.57
PA	4247872	Martinsburg borough	1958	646.9	798	24.5	2392517	14303	102294.2	9.3	-7.8	23.63
PA	4247896	Martins Creek CDP	631	209.2	310	4.7	894069	11605	37710.8	10.1	-7.8	24.15
PA	4247968	Marysville borough	2534	362.4	1201	27.2	3332160	20511	98380.3	10.8	-6.6	23.36
PA	4248000	Masontown borough	3450	721.0	1659	32.9	4526297	29683	96341.1	10.7	-7.0	24.28
PA	4248032	Masthope CDP	685	30.7	1040	3.2	3052860	54395	94695.6	7.9	-10.9	25.57
PA	4248048	Matamoras borough	2469	882.6	1056	56.5	3658982	14843	99084.6	9.3	-9.7	23.92
PA	4248064	Mather CDP	737	250.9	257	9.1	906814	8366	39674.9	10.4	-7.5	29.75
PA	4248072	Mattawana CDP	276	91.8	136	3.0	395249	7976	16168.1	10.5	-7.5	19.37
PA	4248176	Mayfield borough	1807	399.5	817	20.9	2454982	24620	99111.7	7.9	-10.9	19.93
PA	4248224	Maytown CDP	3824	245.7	1294	26.7	3816006	37556	93065.4	11.2	-6.4	24.15
PA	4248320	Meadowlands CDP	822	148.9	216	12.0	714894	12811	31179.9	10.2	-8.1	30.54
PA	4248336	Meadowood CDP	2693	453.8	1052	53.2	3943708	26814	100514.1	9.2	-9.1	23.07
PA	4248360	Meadville city	13388	1080.7	6227	532.0	19466623	91550	1055846.2	8.2	-9.8	25.77
PA	4248376	Mechanicsburg borough	8981	1245.2	4550	235.0	13251436	47854	489497.6	11.1	-6.5	24.15
PA	4248448	Mechanicsville borough	457	551.0	234	5.5	679416	5249	29796.9	9.6	-8.8	22.00
PA	4248480	Media borough	5327	2180.9	3131	561.8	9462577	19113	392644.8	11.9	-4.9	24.15
PA	4248696	Mercer borough	2002	514.2	932	28.6	2445138	22614	99406.9	8.8	-9.4	26.46
PA	4248704	Mercersburg borough	1561	355.8	762	8.5	1928729	14979	76284.1	10.9	-7.0	24.15
PA	4248728	Meridian CDP	3881	414.7	1539	76.7	5659701	42641	200145.5	9.1	-9.1	23.56
PA	4248824	Mertztown CDP	664	171.9	340	4.6	944520	11562	39239.3	10.2	-7.8	24.15
PA	4248856	Meshoppen borough	563	154.1	243	8.8	729857	9303	34951.3	8.8	-9.4	23.52
PA	4248868	Messiah College CDP	2215	1064.2	9	29.4	596624	4141	35192.0	11.1	-6.5	24.15
PA	4248904	Mexico CDP	472	121.1	198	5.9	669300	13379	27792.0	10.6	-7.7	22.48
PA	4248912	Meyersdale borough	2184	814.2	995	26.7	2948483	17312	102987.9	8.4	-9.5	24.40

PA	4248960	Middleburg borough	1309	516.8	785	18.0	1973840	15053	80679.0	10.2	-8.2	22.99
PA	4249048	Middleport borough	405	187.4	210	4.8	557044	5791	24866.0	9.2	-8.9	21.83
PA	4249128	Middletown borough	8901	1525.3	3943	145.8	9535761	39400	291736.7	11.3	-6.2	24.15
PA	4249144	Middletown CDP	7441	905.8	2907	108.2	9987163	54287	393043.5	10.4	-7.3	24.15
PA	4249184	Midland borough	2635	459.4	1523	20.4	2943624	26654	95399.6	10.1	-8.1	26.81
PA	4249224	Midway CDP	2125	1379.2	986	22.7	2719283	15893	95521.6	11.2	-6.6	24.15
PA	4249240	Midway borough	913	339.7	346	10.1	1088082	8626	48868.1	9.8	-8.1	26.65
PA	4249272	Mifflin borough	642	548.1	225	8.0	568978	3773	23724.6	10.6	-7.6	22.58
PA	4249288	Mifflinburg borough	3540	629.0	1649	41.8	4706670	32491	196179.6	10.0	-8.1	24.00
PA	4249304	Mifflintown borough	936	686.7	408	11.7	958356	3621	39675.6	10.6	-7.6	22.58
PA	4249312	Mifflinville CDP	1253	200.3	517	15.3	1709464	22131	76510.5	9.5	-8.8	20.32
PA	4249368	Milesburg borough	1123	285.0	450	11.6	1338920	9754	51161.5	9.8	-8.1	20.60
PA	4249400	Milford borough	1021	392.3	554	23.4	1665568	12193	80013.1	9.1	-9.9	23.77
PA	4249440	Milford Square CDP	897	185.0	303	11.9	710741	11695	30266.5	10.4	-7.2	24.15
PA	4249552	Mill Creek borough	328	215.9	124	3.1	384362	4987	16230.1	10.4	-8.0	21.48
PA	4249680	Millersburg borough	2557	870.5	1293	24.9	3154740	15828	97595.5	10.5	-7.4	22.46
PA	4249720	Millerstown borough	673	205.6	323	7.2	964836	12282	40292.2	10.5	-7.6	22.39
PA	4249728	Millersville borough	8168	1076.8	2672	63.4	6884022	39232	192080.0	11.2	-6.6	24.15
PA	4249736	Millerton CDP	316	102.5	142	4.8	437437	6384	22280.3	7.7	-10.4	24.73
PA	4249760	Mill Hall borough	1613	466.4	693	16.8	2052051	19618	82077.6	9.6	-8.4	20.49
PA	4249768	Millheim borough	904	199.3	349	9.3	1093854	14802	49251.6	9.3	-8.7	20.41
PA	4249880	Millsboro CDP	666	321.2	216	7.4	658000	11085	28477.2	10.6	-7.4	23.23
PA	4249920	Millvale borough	3744	2015.7	2068	26.8	4569995	14556	97735.6	10.4	-7.9	21.80
PA	4249936	Mill Village borough	412	127.0	147	2.4	434771	8484	20452.1	8.2	-9.8	26.56
PA	4249944	Millville borough	948	292.8	393	11.6	986043	11680	44824.2	9.2	-8.9	20.94
PA	4249960	Millwood CDP	566	141.1	80	4.8	307286	7614	14392.6	9.5	-9.1	30.51
PA	4250000	Milroy CDP	1498	457.7	585	16.4	1829285	17633	78118.4	10.0	-8.0	19.16
PA	4250016	Milton borough	7042	706.0	3172	141.0	8688555	50494	298003.8	9.9	-8.2	23.08
PA	4250088	Minersville borough	4397	1443.0	2269	52.5	5499341	16401	203389.5	9.4	-8.6	21.92
PA	4250104	Mingoville CDP	503	59.5	202	5.2	689105	9702	31037.8	9.3	-8.6	18.32
PA	4250208	Mocanaqua CDP	646	360.6	346	7.9	921396	6479	42007.5	9.0	-9.1	20.64
PA	4250232	Modena borough	535	293.7	203	3.2	453650	5726	17807.7	11.1	-6.2	24.15
PA	4250272	Mohnton borough	3043	950.1	1373	39.7	3673399	17232	98135.6	10.4	-7.5	24.15
PA	4250280	Mohrsville CDP	383	126.7	138	5.0	424663	6250	18177.9	10.3	-7.7	24.15
PA	4250320	Monaca borough	5737	889.6	3009	150.5	9548803	40328	395857.4	10.2	-7.9	24.94
PA	4250344	Monessen city	7720	1001.5	4223	95.1	12416414	61878	488059.8	10.5	-7.5	29.12
PA	4250408	Monongahela city	4300	616.2	2306	47.5	6216506	32726	193482.8	10.6	-7.6	32.33
PA	4250432	Monroe borough	554	195.2	281	7.8	933219	7333	44282.6	8.7	-10.0	26.68
PA	4250528	Monroeville municipality	28386	633.0	13276	1068.0	45963511	263716	2178100.5	9.9	-8.4	30.74
PA	4250544	Mont Alto borough	1705	639.1	643	9.2	1726971	11417	65011.3	10.7	-7.6	24.15
PA	4250552	Montandon CDP	903	181.1	283	8.8	890771	14026	38801.7	9.9	-8.3	22.54
PA	4250632	Montgomery borough	1579	559.7	658	23.1	1921538	12059	82697.8	9.8	-8.5	24.92
PA	4250672	Montgomeryville CDP	12624	943.2	4430	325.9	14692519	85754	584078.6	11.0	-6.2	24.15
PA	4250720	Montoursville borough	4615	372.1	2222	67.5	6470840	51900	192133.5	9.7	-8.9	26.34
PA	4250736	Montrose borough	1617	391.4	862	22.7	2224650	19355	107241.6	7.1	-10.4	23.77
PA	4250748	Montrose Manor CDP	604	850.6	257	7.2	839946	5732	35591.9	10.6	-7.2	24.15
PA	4250760	Monument CDP	150	57.1	63	1.5	183933	2002	8315.6	9.1	-9.1	20.66
PA	4250880	Moosic borough	5719	291.3	2166	206.0	8162556	65062	401764.1	8.7	-9.5	26.24
PA	4251016	Morgantown CDP	826	252.5	402	10.8	1120647	12172	46468.7	10.6	-7.2	24.15
PA	4251120	Morrisdale CDP	754	132.4	299	6.7	883551	14882	42972.4	7.9	-9.5	25.51
PA	4251144	Morrisville borough	8728	1481.3	4191	192.2	11183517	43424	387541.0	11.6	-5.5	24.15
PA	4251152	Morrisville CDP	1265	322.1	418	28.3	1215531	19633	59576.0	10.2	-7.7	31.57
PA	4251176	Morton borough	2669	2318.6	1228	10.9	2515516	9271	81501.4	12.2	-4.8	24.15
PA	4251208	Moscow borough	2026	245.7	956	23.4	2931590	25410	105422.6	7.1	-11.2	31.33
PA	4251240	Moshannon CDP	281	64.5	82	2.9	293136	4195	14345.3	8.1	-9.4	20.07
PA	4251320	Mount Aetna CDP	354	161.9	179	4.6	511445	6869	21711.8	10.2	-7.6	24.15

PA	4251344	Mountainhome CDP	1182	203.1	608	3.9	1691463	25905	66209.1	8.1	-10.2	24.71
PA	4251384	Mountain Top CDP	10982	223.2	4049	108.6	13034304	132473	614245.8	7.8	-9.9	21.20
PA	4251488	Mount Carbon borough	91	594.0	48	1.1	122557	1444	5362.2	9.5	-8.4	22.05
PA	4251496	Mount Carmel borough	5893	1547.5	3422	104.4	8134948	16996	317483.1	8.6	-9.0	20.58
PA	4251536	Mount Cobb CDP	1799	95.6	857	20.8	2922146	46847	102390.5	6.8	-11.2	27.99
PA	4251552	Mount Eagle CDP	103	32.6	54	1.1	169205	2225	7481.6	9.4	-8.5	19.15
PA	4251568	Mount Gretna borough	196	221.1	227	1.8	704483	3732	28847.1	10.3	-7.3	24.15
PA	4251576	Mount Gretna Heights CDP	323	208.0	262	2.9	822096	3191	34180.3	10.1	-7.3	24.15
PA	4251592	Mount Holly Springs borough	2030	343.1	828	12.3	1932802	18001	78002.1	10.7	-7.0	24.15
PA	4251632	Mount Jewett borough	919	138.8	357	13.0	1231376	21668	70143.1	6.1	-11.7	25.95
PA	4251656	Mount Joy borough	7410	680.2	3015	161.0	8965079	49813	289446.4	11.1	-6.7	24.15
PA	4251720	Mount Morris CDP	737	101.7	253	9.1	885748	21216	38173.3	10.6	-7.2	32.82
PA	4251744	Mount Oliver borough	3403	3042.6	1714	24.3	4048077	8733	100535.2	10.0	-8.0	21.00
PA	4251760	Mount Penn borough	3106	1638.5	1335	40.5	3459096	11107	100332.4	10.4	-7.1	24.15
PA	4251880	Mount Pleasant borough	4454	1316.3	2252	119.8	7347679	22472	300734.1	9.9	-8.1	19.25
PA	4251904	Mount Pleasant Mills CDP	464	79.0	217	6.4	675796	12527	28844.0	10.1	-7.9	22.06
PA	4251912	Mount Pocono borough	3170	228.9	1477	10.5	3206525	38923	103350.8	7.2	-10.5	24.68
PA	4251984	Mount Union borough	2447	752.2	1240	22.8	3294133	22511	96102.7	10.5	-7.3	21.24
PA	4252016	Mountville borough	2802	777.1	1235	18.2	2812633	19284	95411.4	11.0	-6.7	24.15
PA	4252056	Mount Wolf borough	1393	561.1	632	8.7	1780667	10363	65847.8	11.2	-6.3	24.15
PA	4252216	Muhlenberg Park CDP	1420	589.8	679	34.6	2451163	13758	97222.4	10.6	-7.2	24.15
PA	4252224	Muir CDP	451	115.1	199	5.4	627939	7042	27688.1	9.6	-8.5	22.30
PA	4252264	Muncy borough	2477	861.7	1148	36.2	3181719	19039	98471.9	9.6	-8.7	24.43
PA	4252312	Mundys Corner CDP	1651	103.8	443	21.9	1705280	51095	88860.0	8.2	-9.6	28.34
PA	4252320	Munhall borough	11406	1801.7	6033	117.6	15726869	51484	597934.9	10.2	-7.9	19.84
PA	4252432	Murrysville municipality	20079	201.2	7950	421.0	29464033	329586	1338430.8	9.6	-8.7	33.52
PA	4252440	Muse CDP	2504	327.9	842	58.5	3256742	17978	97673.8	10.0	-7.9	26.99
PA	4252488	Myerstown borough	3062	928.2	1406	27.9	3367295	19856	97172.5	10.5	-7.5	24.15
PA	4252584	Nanticoke city	10465	1125.5	5298	119.0	13701640	50918	609289.6	9.2	-8.9	20.77
PA	4252616	Nanty-Glo borough	2734	468.7	1200	36.2	3866173	26249	102970.3	8.3	-9.7	28.31
PA	4252632	Naomi CDP	69	585.2	38	0.7	124066	2786	5042.3	10.8	-7.5	20.64
PA	4252664	Narberth borough	4282	2591.5	1989	26.0	4379868	12876	98864.4	11.8	-5.0	24.15
PA	4252808	Nazareth borough	5746	1213.3	2573	151.7	7135417	31990	299436.5	10.0	-7.6	24.15
PA	4252872	Needmore CDP	170	43.0	71	2.2	246163	3523	10318.6	10.7	-7.2	25.11
PA	4252968	Nemacolin CDP	937	283.0	387	5.9	1138547	14549	47280.9	10.6	-7.0	25.31
PA	4252984	Nescopeck borough	1583	191.9	755	19.3	2100377	15777	95091.4	9.3	-8.8	20.40
PA	4253088	Nesquehoning borough	3349	73.3	1685	37.9	4542716	58188	197590.6	8.5	-9.1	21.33
PA	4253152	New Albany borough	356	119.7	181	5.0	549207	5830	27407.2	7.9	-10.0	28.35
PA	4253160	New Alexandria borough	560	103.2	252	6.3	737496	9584	32617.1	9.7	-8.7	24.19
PA	4253168	New Baltimore borough	180	44.0	84	2.2	258623	5180	11480.7	9.6	-8.6	27.03
PA	4253184	New Beaver borough	1502	44.6	445	8.0	1407238	81694	61217.3	9.5	-8.4	29.84
PA	4253192	New Bedford CDP	925	90.8	308	4.9	947134	20207	42252.6	9.2	-8.6	26.21
PA	4253200	New Berlin borough	873	326.8	385	10.3	1210116	8058	51107.0	10.1	-8.1	22.97
PA	4253208	New Berlinville CDP	1368	515.1	536	17.4	1560333	18605	63769.1	10.6	-7.1	24.15
PA	4253248	New Bethlehem borough	989	418.3	483	15.3	1316554	10602	64094.7	8.6	-10.1	19.22
PA	4253288	New Brighton borough	6025	1918.2	2858	130.2	7986732	25639	299324.5	10.1	-8.1	26.78
PA	4253296	New Britain borough	3152	487.5	961	28.1	2860679	22189	95609.0	11.2	-6.2	24.15
PA	4253320	New Buffalo borough	129	175.5	74	1.4	192597	1533	7808.7	10.9	-7.1	22.91
PA	4253336	Newburg borough	92	16.5	60	0.8	421139	3510	8897.6	8.4	-9.7	29.07
PA	4253344	Newburg borough	336	291.7	145	2.0	191511	8729	16866.2	10.9	-6.9	24.12

PA	4253368	New Castle city	23273	1179.6	11399	545.0	35983807	163274	1617867.9	9.5	-8.6	29.14
PA	4253392	New Castle Northwest CDP	1413	1029.3	661	34.7	2618370	15448	101982.2	9.3	-8.6	28.59
PA	4253416	New Centerville borough	133	51.0	62	1.6	198086	2752	9563.8	8.2	-9.6	30.63
PA	4253432	New Columbia CDP	1013	182.8	455	12.0	1506292	24655	63434.2	9.8	-8.1	23.61
PA	4253448	New Columbus borough	227	25.2	78	2.8	252548	15755	11958.8	8.9	-9.1	20.98
PA	4253464	New Cumberland borough	7277	1485.4	3410	152.1	10706080	40766	389780.9	11.3	-6.1	24.15
PA	4253496	New Eagle borough	2184	773.3	804	24.1	2449129	19399	95709.3	10.5	-7.5	26.22
PA	4253504	Newell borough	541	663.5	259	5.2	815384	8062	33381.4	10.8	-7.3	25.03
PA	4253544	New Florence borough	689	417.6	313	7.7	943748	7297	41661.2	9.8	-8.8	22.73
PA	4253568	New Freedom borough	4464	531.6	1702	27.9	4989604	38924	191921.3	10.7	-6.7	24.15
PA	4253576	New Freeport CDP	112	22.8	33	1.4	123004	4189	5571.4	10.0	-8.0	24.15
PA	4253592	New Galilee borough	379	198.9	168	2.9	511906	5548	22570.6	9.7	-8.3	29.86
PA	4253696	New Holland borough	5378	622.0	2310	151.0	6829543	33299	292631.7	10.8	-6.9	24.15
PA	4253712	New Hope borough	2528	561.8	1370	22.6	3213028	19728	95451.3	11.3	-6.4	24.15
PA	4253728	New Jerusalem CDP	649	98.0	262	8.5	906530	11860	40153.7	9.6	-8.0	24.15
PA	4253736	New Kensington city	13116	1240.3	7198	282.2	20827090	81751	889562.2	9.9	-8.6	22.38
PA	4253752	New Kingstown CDP	495	103.9	256	8.8	688783	14848	27878.4	11.1	-6.6	24.15
PA	4253768	New Lebanon borough	188	61.1	41	2.7	156667	8263	7843.2	8.3	-9.7	25.83
PA	4253856	Newmanstown CDP	2478	248.6	904	22.6	2624902	27201	94177.9	10.4	-7.7	24.15
PA	4253872	New Market CDP	816	563.2	326	10.9	676663	4205	26350.4	11.4	-6.1	24.15
PA	4253880	New Milford borough	868	207.9	353	12.2	1080818	9866	53611.7	7.6	-10.8	24.63
PA	4253916	New Morgan borough	71	22.9	13	0.9	54145	15994	2415.2	10.3	-7.2	24.15
PA	4253920	New Oxford borough	1783	907.8	860	18.0	1963905	12163	77598.1	11.2	-6.5	24.15
PA	4253928	New Paris borough	186	35.0	76	2.4	228412	1389	10335.9	9.6	-8.0	23.94
PA	4253944	New Philadelphia borough	1085	140.5	597	13.0	1477782	11672	65530.6	9.2	-8.8	21.88
PA	4253968	Newport borough	1574	1109.4	766	16.9	1824233	7744	66695.9	10.7	-7.4	22.73
PA	4254016	New Ringgold borough	276	107.5	136	3.3	397387	6305	17392.5	9.6	-8.4	24.15
PA	4254024	Newry borough	270	115.8	131	3.4	376499	2178	16559.1	9.8	-7.8	24.23
PA	4254040	New Salem CDP	579	111.6	366	5.5	1002317	8112	41316.7	10.4	-7.2	24.03
PA	4254056	New Salem borough	724	358.7	287	4.5	839981	6336	33320.7	11.0	-6.5	24.15
PA	4254064	New Schaefferstown CDP	223	56.5	48	2.9	186793	6974	8266.9	10.2	-7.6	24.15
PA	4254104	New Stanton borough	2173	212.4	1419	24.4	3081533	52534	90197.1	10.1	-8.1	24.27
PA	4254160	Newton Hamilton borough	205	121.5	87	2.2	256525	3091	10470.2	10.6	-7.3	20.67
PA	4254184	Newtown borough	2248	1295.2	959	20.1	2647759	14042	96278.0	11.4	-6.0	24.15
PA	4254264	Newtown CDP	243	68.5	112	2.9	372377	6395	16726.2	9.3	-8.6	22.11
PA	4254268	Newtown Grant CDP	3620	1086.9	1632	91.7	4376612	15934	98055.2	11.1	-6.1	24.15
PA	4254288	New Tripoli CDP	898	169.3	343	7.4	929666	6603	40975.7	9.7	-8.0	24.15
PA	4254320	Newville borough	1326	517.3	644	8.0	1415867	9314	50271.4	10.9	-6.9	23.97
PA	4254344	New Washington borough	59	12.5	54	0.5	169025	6701	7919.4	8.1	-9.6	31.99
PA	4254352	New Wilmington borough	2466	701.5	681	13.1	1707468	14506	76397.2	9.2	-8.8	27.40
PA	4254400	Nicholson borough	767	206.3	356	12.0	1051773	12072	50780.1	8.6	-9.7	21.95
PA	4254520	Nittany CDP	658	77.3	305	6.8	1009270	13812	44791.7	9.5	-9.0	18.30
PA	4254552	Nixon CDP	1373	170.0	549	20.7	1945324	33932	88271.9	9.3	-9.0	22.98
PA	4254568	Noblestown CDP	575	208.7	144	7.3	486382	9457	21923.2	10.1	-7.9	22.21
PA	4254656	Norristown borough	34324	3168.7	14228	589.0	29676432	82405	1174245.4	11.7	-5.6	24.15
PA	4254696	Northampton borough	9926	1313.2	4241	119.8	10616856	51342	394536.4	10.4	-7.3	24.15
PA	4254728	North Apollo borough	1297	750.7	600	17.2	1874698	10330	81696.1	9.6	-9.2	19.38
PA	4254776	North Belle Vernon borough	1971	1803.0	936	22.1	2848063	10915	97062.2	10.6	-7.3	21.27
PA	4254816	North Braddock borough	4857	1222.0	2992	29.9	7516914	28423	293350.1	10.3	-8.0	19.12
PA	4254872	North Catasauqua borough	2849	1787.7	1283	21.2	3547046	15532	98996.0	10.4	-7.2	24.15

PA	4254888	North Charleroi borough	1313	1474.7	669	14.5	1805814	7076	66367.0	10.8	-7.4	29.12
PA	4254952	North East borough	4294	1005.6	1763	25.0	4186779	27469	102802.4	8.8	-8.7	25.54
PA	4255000	Northern Cambria borough	3835	457.0	1855	50.8	5639380	51467	199007.8	8.6	-9.5	21.25
PA	4255136	North Irwin borough	846	1174.7	397	9.5	1089362	4059	46790.2	10.2	-8.2	23.44
PA	4255304	North Philipsburg CDP	660	418.5	357	6.8	913564	7954	43158.1	8.2	-9.6	25.19
PA	4255456	Northumberland borough	3804	805.9	1879	37.1	4975617	29694	195369.4	10.0	-8.2	20.96
PA	4255480	North Vandergrift CDP	447	773.2	220	5.9	563994	8293	25616.5	9.6	-9.2	21.00
PA	4255512	North Wales borough	3229	1284.3	1462	19.6	3648235	15153	98704.0	11.1	-6.1	24.15
PA	4255520	North Warren CDP	1934	127.3	903	21.3	2905011	46052	100947.8	7.6	-9.9	27.95
PA	4255572	Northwest Harborcreek CDP	8949	606.8	3577	110.2	11335805	75672	515908.5	8.9	-8.4	24.28
PA	4255584	Northwood CDP	296	134.1	138	3.7	408408	8693	18930.4	9.0	-8.5	24.66
PA	4255608	North York borough	1914	1477.3	753	12.0	1637250	6460	63450.5	11.4	-6.2	24.15
PA	4255616	Norvelt CDP	948	166.5	424	20.6	1598756	15745	65944.1	9.9	-8.3	27.93
PA	4255664	Norwood borough	5890	2607.8	2227	52.7	5679714	17268	193372.3	12.4	-4.6	24.15
PA	4255728	Noxen CDP	633	100.8	287	9.9	909447	12353	45059.5	8.2	-9.6	21.62
PA	4255752	Nuangola borough	679	221.2	449	8.3	1442618	12606	68221.1	8.3	-9.4	20.79
PA	4255792	Numidia CDP	244	64.5	132	3.0	410367	9429	18752.8	8.9	-9.1	19.81
PA	4255808	Nuremberg CDP	434	168.8	192	5.2	489410	4970	22632.1	8.7	-9.3	20.25
PA	4255840	Oakdale borough	1459	556.0	616	10.4	1849189	10714	77768.1	10.2	-7.9	21.94
PA	4255969	Oak Hills CDP	2333	246.9	996	46.1	2877405	31144	98027.4	9.1	-9.1	23.07
PA	4255996	Oakland CDP	1578	589.4	826	20.9	2579761	16631	100508.8	8.8	-9.4	25.02
PA	4256000	Oakland CDP	1569	355.3	716	26.1	2632953	19991	101024.4	9.4	-8.4	28.89
PA	4256008	Oakland borough	616	710.4	278	8.6	882492	8103	43009.7	8.0	-10.8	24.08
PA	4256088	Oakmont borough	6303	1490.0	3217	206.0	9553821	33230	392167.3	10.2	-8.3	24.36
PA	4256232	Oakwood CDP	2270	434.2	943	37.7	3331315	43382	96302.1	9.4	-8.4	28.80
PA	4256264	Oberlin CDP	588	1115.0	216	14.9	667045	3251	28225.2	11.0	-6.2	24.15
PA	4256408	Ohiopyle borough	59	28.6	32	0.6	104619	5053	4540.4	9.7	-8.7	34.06
PA	4256432	Ohioville borough	3533	80.4	1291	27.3	4154703	103919	176956.7	9.7	-8.3	31.36
PA	4256456	Oil City city	10557	923.3	5046	200.3	15437956	83659	721869.0	8.4	-10.0	25.93
PA	4256488	Oklahoma CDP	782	212.7	271	12.1	686439	10762	33046.3	8.0	-9.9	31.87
PA	4256496	Oklahoma borough	809	674.8	357	9.1	1142778	9007	50145.4	9.6	-9.0	18.02
PA	4256576	Old Forge borough	8313	1114.0	3860	151.9	11140291	56873	507434.0	9.1	-8.9	22.15
PA	4256624	Old Orchard CDP	2434	625.8	992	49.5	3778267	17922	98115.8	10.4	-7.7	24.15
PA	4256664	Oley CDP	1282	306.3	522	16.7	1711535	15335	65288.7	10.5	-7.3	24.15
PA	4256704	Oliver CDP	2535	951.8	973	33.5	3030111	32670	93912.1	10.4	-7.3	24.66
PA	4256792	Olyphant borough	5151	208.5	2269	59.6	6022078	43854	204416.7	7.8	-10.9	25.86
PA	4256816	Oneida CDP	200	199.0	101	2.4	237729	2913	11517.9	7.7	-9.5	20.31
PA	4256912	Orangeville borough	508	177.9	182	6.2	531241	5679	24509.8	9.1	-9.0	20.51
PA	4256928	Orbisonia borough	428	141.7	251	4.0	674360	2503	27612.0	10.6	-7.5	22.04
PA	4256960	Orchard Hills CDP	1952	183.9	771	25.8	2721457	35491	79771.3	9.3	-9.2	20.26
PA	4257024	Oreland CDP	5678	1399.1	2153	112.5	7625365	32031	291113.2	11.7	-5.5	24.15
PA	4257112	Orrstown borough	262	52.5	94	1.4	270505	1146	10783.7	10.9	-6.8	24.15
PA	4257120	Orrtanna CDP	173	58.3	59	1.7	202730	3310	8246.3	10.9	-6.8	24.15
PA	4257160	Orviston CDP	95	56.4	46	1.0	153515	2776	6830.2	9.4	-9.2	20.12
PA	4257184	Orwigsburg borough	3099	423.2	1252	37.0	3595048	33298	97086.6	9.6	-8.4	22.20
PA	4257192	Orwin CDP	314	75.2	88	3.7	318090	4932	14244.4	9.8	-8.4	22.35
PA	4257232	Osceola Mills borough	1141	466.2	529	10.1	1610484	8209	72363.3	8.0	-9.6	24.93
PA	4257280	Oswayo borough	139	35.1	74	2.3	254466	6675	13562.1	6.8	-11.6	30.31
PA	4257376	Oval CDP	361	96.4	146	5.3	513403	8930	22816.5	9.5	-8.8	26.60
PA	4257480	Oxford borough	5077	742.4	1695	30.2	3567603	32291	94282.0	11.2	-6.1	24.15
PA	4257544	Paint borough	1023	541.7	443	12.5	1314698	7261	61137.7	8.8	-9.2	24.44
PA	4257648	Palmdale CDP	1308	345.3	733	29.0	1917352	16699	80557.1	10.9	-6.8	24.15
PA	4257680	Palmer Heights CDP	3762	935.6	1472	76.6	5463309	27528	198946.0	10.2	-7.4	24.15
PA	4257696	Palmerton borough	5414	517.1	2470	107.2	6951529	38489	296791.9	10.0	-8.0	24.15
PA	4257720	Palmyra borough	7320	1337.9	3292	142.6	8541049	42621	292496.9	10.8	-6.9	24.15

PA	4257752	Palo Alto borough	1032	171.3	460	12.3	1361809	7882	60957.8	9.3	-8.8	22.06
PA	4257816	Paoli CDP	5575	1037.1	2478	154.9	8096101	39686	296511.8	11.0	-6.2	24.15
PA	4257840	Paradise CDP	1129	166.3	446	7.3	1144167	11911	45321.9	11.0	-6.7	24.15
PA	4257904	Pardeesville CDP	572	234.0	372	9.3	1010305	7074	50327.1	7.6	-9.7	20.72
PA	4257928	Paris CDP	732	95.9	269	8.1	927014	18082	42121.4	9.7	-8.5	24.15
PA	4257968	Park Crest CDP	542	181.9	279	6.5	897946	8411	41754.6	8.6	-9.1	21.05
PA	4257976	Parker city	840	211.4	421	11.1	1219980	10257	51309.2	9.0	-9.6	20.25
PA	4258032	Parkesburg borough	3593	659.6	1397	21.4	3518910	23718	96681.0	10.8	-6.6	24.15
PA	4258036	Park Forest Village CDP	9660	1011.6	4227	70.7	9712750	49987	410317.8	9.2	-8.1	21.43
PA	4258176	Parkside borough	2328	3327.3	931	9.5	2318764	5120	82404.0	12.3	-4.6	24.15
PA	4258240	Parkville CDP	6706	729.5	2647	112.1	8122495	45631	292516.5	11.0	-6.6	24.15
PA	4258304	Parryville borough	525	112.5	226	5.9	682671	19465	30634.8	9.5	-8.3	24.15
PA	4258384	Patterson Heights borough	636	761.6	316	4.9	937764	4199	40551.7	9.9	-7.9	27.09
PA	4258432	Patton borough	1769	392.2	906	23.4	2504903	17726	104077.0	8.2	-9.7	30.11
PA	4258504	Paxtang borough	1561	1471.9	682	15.2	1877082	9292	75510.8	11.2	-6.3	24.15
PA	4258528	Paxtonia CDP	5412	773.4	2238	114.2	7184398	50556	291164.1	10.9	-6.5	24.15
PA	4258536	Paxtonville CDP	265	37.6	96	3.6	338019	3933	14655.6	10.1	-8.1	23.22
PA	4258696	Pen Argyl borough	3595	709.4	1561	26.7	3867338	23273	101048.5	9.2	-8.5	24.15
PA	4258712	Penbrook borough	3008	2084.5	1385	29.3	3284802	10978	99121.0	11.0	-6.4	24.15
PA	4258776	Pen Mar CDP	929	209.9	362	10.5	1249084	8828	50322.0	10.5	-7.3	24.15
PA	4258872	Penn borough	475	484.3	190	5.3	616846	3722	26918.6	10.0	-8.4	24.03
PA	4258936	Penndel borough	2328	1602.9	949	20.8	2217974	10527	81516.3	11.5	-5.7	24.15
PA	4258948	Penn Estates CDP	4493	402.4	1624	58.3	5740535	39110	203931.2	8.7	-9.1	24.15
PA	4259054	Penn Lake Park borough	308	71.6	368	3.8	1140166	13897	52713.4	7.9	-10.0	22.18
PA	4259120	Pennsburg borough	3843	883.5	1359	23.3	3161506	16854	97328.4	10.7	-7.1	24.15
PA	4259152	Pennsbury Village borough	661	708.7	480	4.7	894620	1762	36953.0	10.1	-7.8	21.53
PA	4259160	Penns Creek CDP	715	202.3	195	9.8	618419	7734	27225.3	10.1	-8.1	23.63
PA	4259176	Pennside CDP	4215	1501.3	1868	55.0	5342951	21276	198270.0	10.5	-7.1	24.15
PA	4259296	Pennville CDP	1947	846.6	900	32.5	2542215	12606	97191.8	11.1	-6.6	24.15
PA	4259304	Pennwyn CDP	780	495.1	376	9.2	1192685	8023	50971.2	10.3	-7.3	24.15
PA	4259312	Penn Wynne CDP	5697	2508.8	2318	207.9	7835595	23142	292610.7	12.0	-5.0	24.15
PA	4259344	Penryn CDP	1024	149.9	382	17.9	1424114	14739	58374.0	10.6	-7.2	24.15
PA	4259384	Perkasie borough	8511	1218.8	3365	144.1	9617476	52090	388001.7	10.8	-6.8	24.15
PA	4259520	Perryopolis borough	1784	364.6	708	17.0	2270767	22460	93126.3	10.5	-7.7	19.87
PA	4259616	Petersburg borough	480	315.8	200	4.5	586889	3553	25141.1	10.0	-7.8	22.65
PA	4259672	Petrolia borough	212	90.8	75	2.4	255503	4224	12132.0	8.8	-9.8	19.61
PA	4260000	Philadelphia city	1526006	4061.6	667552	21818.0	###########	2779529	52136386.8	12.1	-4.9	24.15
PA	4260008	Philipsburg borough	2770	694.3	1589	28.6	3915275	19131	105116.7	8.2	-9.6	25.26
PA	4260120	Phoenixville borough	16440	1423.6	7898	337.7	19026279	72024	778939.8	11.3	-6.4	24.15
PA	4260136	Picture Rocks borough	678	175.6	211	9.9	739116	11181	34311.9	9.0	-9.1	24.61
PA	4260224	Pikes Creek CDP	269	85.0	162	3.3	511031	11423	24440.8	8.2	-9.5	21.15
PA	4260264	Pillow borough	298	180.2	121	2.9	350526	4860	14993.1	10.2	-7.8	21.83
PA	4260432	Pine Glen CDP	190	55.4	64	2.0	209183	4268	10160.8	8.1	-9.5	19.38
PA	4260456	Pine Grove borough	2186	572.2	907	26.1	2303574	19005	96440.8	10.0	-8.1	22.59
PA	4260496	Pine Grove Mills CDP	1502	125.2	613	30.1	2213155	21585	99433.8	8.8	-8.5	21.13
PA	4260547	Pine Ridge CDP	2707	171.3	1140	21.1	3792633	37915	100868.7	8.3	-9.8	24.15
PA	4260712	Pitcairn borough	3294	1309.2	1906	23.6	4306810	10969	98647.6	10.2	-8.1	20.12
PA	4261000	Pittsburgh city	305704	2300.6	160110	8189.0	422292239	1234956	19024666.9	10.2	-7.9	21.81
PA	4261048	Pittston city	7739	1768.1	3819	172.7	10704037	32176	509645.5	9.3	-8.9	20.89
PA	4261080	Plainfield CDP	399	167.9	47	2.9	183336	9522	7910.1	10.9	-6.8	23.85
PA	4261112	Plains CDP	4335	1326.5	1855	129.6	6677013	26719	305623.7	9.3	-8.7	20.87
PA	4261168	Platea borough	430	51.8	134	2.5	408805	15100	18767.6	8.7	-8.8	21.28
PA	4261232	Pleasant Gap CDP	2879	365.3	1224	31.0	3637093	22764	98923.6	9.3	-8.8	19.49
PA	4261312	Pleasant Hill CDP	2643	1212.3	1094	66.6	2618834	13442	98356.6	10.6	-7.3	24.15

PA	4261328	Pleasant Hills borough	8268	974.3	3503	284.9	13136761	48025	594714.1	10.1	-7.9	21.44
PA	4261432	Pleasant View CDP	780	566.1	461	10.3	1542354	11437	66145.2	9.6	-9.0	20.19
PA	4261496	Pleasantville borough	198	333.8	89	2.5	1162740	10934	11688.0	9.8	-8.0	23.79
PA	4261512	Pleasantville borough	892	206.7	399	5.4	263684	1774	54311.4	7.5	-10.7	25.87
PA	4261536	Plum borough	27126	376.6	10688	338.4	33188559	282163	1447523.1	9.7	-8.6	28.57
PA	4261624	Plumsteadville CDP	2637	309.0	696	60.4	2838766	28070	95638.2	10.5	-6.8	24.15
PA	4261632	Plumville borough	307	74.6	134	3.1	446406	5998	20789.8	8.8	-9.4	21.96
PA	4261648	Plymouth borough	5951	1271.2	3212	76.1	8043470	24239	305187.0	9.4	-8.5	20.76
PA	4261688	Plymouth Meeting CDP	6177	669.5	2617	277.5	8724040	64368	280675.4	11.7	-5.6	24.15
PA	4261704	Plymptonville CDP	981	379.2	342	18.7	1253742	18078	65114.1	8.2	-9.5	30.05
PA	4261756	Pocono Mountain Lake Estates CDP	842	105.0	873	6.6	2731201	31422	98380.5	8.4	-9.9	24.15
PA	4261768	Pocono Pines CDP	1409	81.8	2276	35.3	6990556	70991	314262.3	7.1	-11.0	26.14
PA	4261773	Pocono Ranch Lands CDP	1062	92.0	536	8.3	1697945	30843	86423.2	8.1	-10.3	24.15
PA	4261774	Pocono Springs CDP	926	73.9	637	11.3	2108994	70752	93955.7	6.4	-11.6	28.40
PA	4261788	Pocono Woodland Lakes CDP	3209	106.7	1189	24.0	4013386	71317	193795.7	7.9	-10.7	24.51
PA	4261864	Point Marion borough	1159	624.6	586	11.1	1675745	9829	64933.4	11.0	-6.8	20.51
PA	4261936	Polk borough	816	187.6	231	4.9	723319	18090	33314.2	8.8	-9.4	27.23
PA	4261968	Pomeroy CDP	401	377.8	170	2.4	409223	4720	16285.8	10.9	-6.4	24.15
PA	4262048	Portage borough	2638	1167.8	1192	35.0	3574134	15491	102530.3	8.7	-9.6	25.08
PA	4262088	Port Allegany borough	2157	362.1	943	30.6	2925937	22926	105529.0	7.2	-11.2	28.30
PA	4262128	Port Carbon borough	1889	761.6	948	22.5	2403651	14517	98613.7	9.5	-8.8	22.00
PA	4262136	Port Clinton borough	326	96.3	153	3.9	453712	6216	19623.3	9.9	-8.2	24.15
PA	4262224	Portersville borough	235	68.0	113	2.6	336166	7578	15522.0	8.9	-9.0	27.60
PA	4262264	Portland borough	519	307.5	227	3.9	569865	8959	24632.0	9.7	-8.6	24.15
PA	4262280	Port Matilda borough	606	192.1	256	6.2	740830	6803	33477.6	9.1	-8.5	22.77
PA	4262304	Port Royal borough	925	455.0	528	11.6	1360343	9832	49897.4	10.7	-7.6	22.45
PA	4262312	Port Trevorton CDP	769	51.5	237	10.6	797993	33283	34566.2	10.2	-7.6	21.63
PA	4262320	Port Vue borough	3798	1189.0	2040	27.2	6054835	25763	195140.3	10.3	-7.8	20.37
PA	4262340	Potlicker Flats CDP	172	54.5	116	1.9	369468	3673	15622.5	9.8	-8.3	18.86
PA	4262396	Pottsgrove CDP	3469	656.7	1331	51.7	4828233	40352	191088.0	10.8	-6.9	24.15
PA	4262416	Pottstown borough	22377	1503.3	10171	554.0	26533534	103683	1076634.2	11.0	-6.7	24.15
PA	4262432	Pottsville city	14324	1344.3	7151	422.0	19337077	74861	916430.0	9.3	-8.5	22.12
PA	4262712	Pringle borough	979	2188.8	405	12.0	1293413	9938	51928.6	9.3	-8.6	20.67
PA	4262736	Progress CDP	9765	1467.1	4422	235.6	13930336	62776	590130.2	11.0	-6.4	24.15
PA	4262744	Prompton borough	250	46.3	104	3.1	347616	10071	17633.3	7.4	-11.4	21.34
PA	4262752	Prospect borough	1169	80.4	406	13.0	1336257	24572	62570.9	9.0	-9.2	23.83
PA	4262784	Prospect Park CDP	327	109.8	173	6.4	592787	3930	30706.0	7.8	-10.6	30.18
PA	4262792	Prospect Park borough	6454	3027.4	2631	85.2	6370335	18911	192810.4	12.4	-4.6	24.15
PA	4262920	Punxsutawney borough	5962	546.4	2983	214.4	10031950	57992	518529.7	8.4	-9.7	25.63
PA	4263009	Pymatuning Central CDP	2269	50.5	2090	23.3	6450461	156294	273826.1	8.5	-9.6	26.13
PA	4263011	Pymatuning North CDP	311	45.6	221	3.2	696403	20031	32042.1	8.5	-9.5	26.87
PA	4263013	Pymatuning South CDP	479	86.8	360	4.9	1129453	27183	47561.5	8.7	-9.4	23.60
PA	4263048	Quakertown borough	8979	1506.1	3686	320.0	10649011	43457	500748.8	10.4	-7.2	24.15
PA	4263064	Quarryville borough	2576	508.4	1018	16.7	2533297	19732	94926.3	10.9	-6.7	24.15
PA	4263116	Queens Gate CDP	1464	674.9	796	27.4	1211190	10295	50015.5	10.9	-6.6	24.15
PA	4263160	Quentin CDP	594	218.2	279	5.4	711338	12408	29339.3	10.4	-7.5	24.15
PA	4263288	Railroad borough	278	176.5	110	1.7	280780	5436	11298.2	10.7	-6.7	24.15
PA	4263312	Rainsburg borough	133	51.0	55	1.7	191257	2968	8598.1	9.6	-8.2	27.42
PA	4263349	Ramblewood CDP	849	75.7	324	17.0	1249890	17161	57724.1	9.3	-8.3	21.75
PA	4263360	Ramey borough	451	126.5	237	4.0	707254	13116	34197.8	7.9	-9.9	28.10
PA	4263408	Rankin borough	2122	1619.1	1098	15.2	2236267	8280	80903.6	10.4	-7.9	19.04
PA	4263416	Ranshaw CDP	510	202.3	329	4.4	809076	2703	35653.3	9.2	-9.1	20.48
PA	4263488	Raubsville CDP	1088	178.6	471	12.2	1569145	19268	63043.6	10.5	-7.2	24.15

PA	4263496	Rauchtown CDP	726	75.8	263	7.6	894303	13988	40440.7	9.3	-9.3	26.11
PA	4263536	Ravine CDP	662	244.3	362	7.9	1005749	12688	42970.4	10.0	-8.0	22.58
PA	4263624	Reading city	88082	3058.8	36017	1144.0	72636333	210304	2983660.6	10.6	-7.2	24.15
PA	4263664	Reamstown CDP	3361	441.0	1247	56.4	4146958	32419	95820.2	10.6	-7.1	24.15
PA	4263688	Rebersburg CDP	494	79.2	188	5.1	605828	6592	27736.8	9.1	-9.0	21.26
PA	4263808	Red Hill borough	2383	768.4	908	14.5	2114903	13625	81409.1	10.7	-7.0	24.15
PA	4263840	Red Lion borough	6373	1168.4	2705	115.0	6849712	31596	196264.0	10.6	-6.9	24.15
PA	4263976	Reedsville CDP	641	218.4	285	7.0	748663	10861	31388.4	10.1	-7.8	19.00
PA	4264032	Refton CDP	298	99.7	64	1.9	194587	7314	7743.0	11.3	-6.5	24.15
PA	4264056	Rehrersburg CDP	319	307.3	92	4.2	308658	5985	13496.1	10.1	-7.7	24.15
PA	4264072	Reiffton CDP	4178	628.7	1497	51.4	5093647	33271	192858.8	10.8	-7.1	24.15
PA	4264104	Reinerton CDP	424	327.6	235	5.1	716069	8146	31173.7	9.6	-8.4	22.35
PA	4264112	Reinholds CDP	1803	439.3	713	15.1	2063732	16015	80552.2	10.5	-7.4	24.15
PA	4264184	Rennerdale CDP	1150	274.3	486	32.9	1951063	11786	81498.4	10.3	-7.7	21.87
PA	4264188	Renningers CDP	574	131.9	183	6.9	618523	16750	27660.7	9.6	-8.3	22.27
PA	4264200	Renovo borough	1228	226.5	712	12.8	1654486	16266	65731.0	9.2	-9.7	23.88
PA	4264224	Republic CDP	1096	529.5	680	11.1	1914419	13129	81251.2	10.5	-7.2	23.09
PA	4264288	Revloc CDP	570	337.8	333	12.4	989043	5404	49194.0	8.1	-9.7	28.94
PA	4264296	Rew CDP	199	30.6	120	2.8	402755	7067	22198.9	6.1	-11.9	29.97
PA	4264368	Reynolds Heights CDP	2061	254.9	765	29.4	2374418	38885	95595.6	8.9	-9.1	27.05
PA	4264376	Reynoldsville borough	2759	552.2	1194	42.9	3528193	25934	102937.4	8.1	-9.9	20.44
PA	4264392	Rheems CDP	1598	297.9	470	11.1	1500787	15129	58763.0	11.1	-6.5	24.15
PA	4264432	Rices Landing borough	463	185.2	189	5.7	662631	11191	28312.3	10.6	-7.3	24.97
PA	4264440	Riceville CDP	68	32.2	33	0.7	107868	2547	5207.7	7.9	-10.1	26.88
PA	4264464	Richboro CDP	6563	567.3	2066	137.0	8313288	65982	284189.7	11.2	-6.0	24.15
PA	4264488	Richfield CDP	549	87.4	238	6.9	729264	11460	31190.0	10.1	-7.9	22.49
PA	4264560	Richland borough	1519	309.3	691	13.9	2017612	15662	81090.1	10.4	-7.5	24.15
PA	4264584	Richlandtown borough	1327	743.9	551	11.8	1428939	5117	52486.5	10.3	-7.3	24.15
PA	4264784	Ridgway borough	4078	508.5	2098	67.9	6397357	42287	319039.2	7.4	-10.7	29.12
PA	4264832	Ridley Park borough	7002	2474.4	3026	101.3	7464509	26194	289840.9	12.4	-4.6	24.15
PA	4264856	Riegelsville borough	868	328.3	364	7.7	1031791	11377	42558.6	10.7	-7.2	24.15
PA	4264904	Rimersburg borough	951	492.3	405	14.7	1256362	8074	63464.1	8.2	-10.0	19.74
PA	4265000	Ringtown borough	818	225.9	367	9.8	1168711	9285	52937.9	8.6	-9.1	20.35
PA	4265088	Riverside CDP	381	416.7	216	5.0	703463	3239	31269.4	9.8	-8.8	25.03
PA	4265112	Riverside borough	1932	132.5	813	18.8	2573463	41907	92169.1	9.6	-8.5	19.97
PA	4265192	Riverview Park CDP	3380	787.4	1360	82.4	4906492	24470	195253.4	10.6	-7.3	24.15
PA	4265256	Roaring Spring borough	2585	554.9	1092	32.3	3227460	17849	101734.4	9.5	-7.8	23.92
PA	4265336	Robesonia borough	2061	394.8	914	26.9	2479939	14962	97394.7	10.3	-7.5	24.15
PA	4265360	Robinson CDP	614	174.0	185	6.2	624086	10024	28164.3	9.6	-8.7	25.94
PA	4265392	Rochester borough	3657	1841.9	1977	28.2	4900909	17645	198716.6	10.2	-7.8	25.05
PA	4265496	Rockhill borough	371	104.7	139	3.5	456386	4625	19122.6	10.5	-7.3	22.14
PA	4265568	Rockledge borough	2543	3145.7	1028	15.4	2483068	8998	82228.8	11.7	-5.2	24.15
PA	4265736	Rockwood borough	890	353.2	373	10.9	999650	7798	47020.7	8.7	-9.7	29.50
PA	4265848	Rogersville CDP	249	133.5	107	3.1	336507	6170	14670.2	10.2	-8.0	25.30
PA	4265872	Rohrsburg CDP	145	74.0	47	1.8	167441	5743	7748.6	9.2	-9.1	20.84
PA	4265944	Rome borough	441	93.3	105	6.2	361345	4584	18527.8	8.4	-9.8	22.07
PA	4265976	Ronco CDP	256	113.4	142	2.3	309841	4914	12350.0	10.7	-7.0	24.47
PA	4265984	Ronks CDP	362	158.9	131	14.2	556586	5966	23407.2	11.1	-6.7	24.15
PA	4266016	Roscoe borough	812	598.4	317	9.0	1007005	5792	42494.2	10.7	-7.3	23.33
PA	4266168	Roseto borough	1567	1144.8	693	11.6	2046081	13372	84753.3	9.3	-8.4	24.15
PA	4266192	Rose Valley borough	913	979.9	378	3.7	1120240	12861	41091.2	12.1	-4.9	24.15
PA	4266232	Roseville borough	189	69.9	57	2.9	208068	3495	11028.0	7.6	-10.5	23.19
PA	4266304	Rossiter CDP	646	142.0	277	6.5	774997	16467	37046.6	8.3	-10.0	24.58
PA	4266320	Rosslyn Farms borough	427	701.2	201	3.1	646441	8621	27022.4	10.3	-7.9	21.55
PA	4266384	Rote CDP	507	79.7	226	5.3	750564	10466	33331.3	9.4	-9.3	22.46
PA	4266392	Rothsville CDP	3044	429.4	1016	39.0	3296917	29438	94645.5	10.8	-7.0	24.15

PA	4266408	Roulette CDP	779	105.8	350	12.8	1198512	18322	62700.1	7.3	-11.1	27.88
PA	4266440	Rouseville borough	523	185.4	216	3.2	686718	7956	32312.1	8.2	-10.1	26.15
PA	4266448	Rouzerville CDP	917	412.0	283	10.4	901249	9406	36934.8	10.9	-7.0	24.15
PA	4266472	Rowes Run CDP	564	115.4	387	5.7	1096780	12876	46342.2	10.5	-7.4	23.92
PA	4266560	Royalton borough	907	625.7	463	8.8	1200994	7352	47349.3	11.3	-6.2	24.15
PA	4266576	Royersford borough	4752	1835.9	2176	28.8	3981139	19138	96632.2	11.1	-6.6	24.15
PA	4266696	Rupert CDP	183	52.1	86	2.2	281502	5736	12568.6	9.4	-8.6	20.00
PA	4266720	Rural Valley borough	876	128.0	477	11.6	1434301	17082	66153.6	8.9	-9.6	22.76
PA	4266808	Russell CDP	1408	140.7	517	15.5	1717088	32260	85599.1	7.9	-10.3	25.38
PA	4266832	Russellton CDP	1440	248.8	648	14.8	1856921	17045	80364.6	9.7	-8.6	24.00
PA	4266864	Rutherford CDP	4303	771.4	1702	109.3	5865434	25970	196847.5	11.0	-6.3	24.15
PA	4266928	Rutledge borough	784	2868.9	315	3.2	889871	3674	32350.1	12.3	-4.8	24.15
PA	4267120	Saegertown borough	997	186.0	405	10.2	1149048	11961	52521.7	8.3	-9.7	25.80
PA	4267224	St. Clair borough	3004	1113.5	1500	35.9	3786802	16275	100678.6	9.4	-8.7	21.77
PA	4267256	St. Clairsville borough	78	31.0	32	1.0	91142	742	4137.2	9.4	-8.5	23.07
PA	4267304	St. Lawrence borough	1809	787.1	780	23.6	1976993	13410	81626.9	10.6	-7.1	24.15
PA	4267344	St. Marys city	13070	55.8	5723	374.0	20159965	298043	1148218.1	6.9	-10.9	36.40
PA	4267352	St. Michael CDP	408	136.3	196	4.6	484016	10224	22666.2	8.7	-9.3	24.47
PA	4267384	St. Petersburg borough	400	114.4	153	6.2	535652	6573	26601.2	8.6	-9.6	23.02
PA	4267584	Salisbury borough	727	317.7	308	8.9	951205	7661	45856.3	8.3	-9.8	24.68
PA	4267608	Salix CDP	1149	183.6	556	12.9	1436508	12426	69629.7	8.1	-10.0	24.90
PA	4267616	Salladasburg borough	238	114.1	87	3.5	298775	6759	13515.4	9.3	-8.8	29.46
PA	4267632	Saltillo borough	346	256.1	158	3.2	489610	4416	20758.1	10.1	-7.4	22.67
PA	4267648	Saltsburg borough	873	433.2	405	8.8	1086438	6023	47403.3	9.8	-8.8	17.92
PA	4267656	Salunga CDP	2695	520.9	1101	30.5	3582998	27889	94908.7	11.0	-6.8	24.15
PA	4267712	Sanatoga CDP	8378	669.1	2968	124.9	8848133	53615	386108.4	10.9	-6.8	24.15
PA	4267744	Sand Hill CDP	2496	1022.9	886	27.7	2916893	19936	96618.3	10.3	-7.5	24.15
PA	4267784	Sandy CDP	1429	279.6	637	22.2	2014808	19152	97220.5	8.0	-9.9	34.81
PA	4267848	Sandy Lake borough	659	200.4	263	9.4	697234	12117	32916.5	8.7	-9.6	25.93
PA	4267872	Sandy Ridge CDP	407	95.6	73	4.2	288324	6709	15108.5	7.6	-9.9	24.28
PA	4267920	Sankertown borough	675	942.3	239	8.9	783276	5746	40273.6	7.9	-9.9	24.78
PA	4268036	Saw Creek CDP	4016	201.0	2988	31.4	8728266	63635	402563.4	8.6	-9.9	24.15
PA	4268056	Saxonburg borough	1525	400.3	655	17.0	1622921	14270	67018.4	9.1	-9.1	21.00
PA	4268072	Saxton borough	736	227.2	405	9.4	1053841	7295	44841.2	10.2	-7.8	23.18
PA	4268088	Saylorsburg CDP	1126	255.2	737	7.9	2200753	17384	96179.8	9.4	-8.7	24.15
PA	4268096	Sayre borough	5587	1038.9	2811	189.4	9000100	40934	413395.6	8.5	-9.9	24.10
PA	4268104	Scalp Level borough	778	885.8	388	10.3	1053047	11967	49864.5	8.7	-9.2	24.55
PA	4268144	Schaefferstown CDP	941	122.1	373	8.6	1208074	25155	46166.3	10.3	-7.7	24.15
PA	4268152	Schellsburg borough	338	102.8	131	4.3	388490	5393	17163.5	10.0	-7.8	25.76
PA	4268188	Schlusser CDP	5265	518.4	1972	32.6	5093849	45044	188938.2	10.9	-6.7	23.71
PA	4268192	Schnecksville CDP	2935	330.8	1232	38.8	3501083	37404	96908.2	9.9	-7.6	24.15
PA	4268200	Schoeneck CDP	1056	121.4	337	8.8	1034545	20657	43020.0	10.5	-7.2	24.15
PA	4268248	Schubert CDP	249	114.0	64	3.2	244691	6133	10941.3	9.9	-7.9	24.15
PA	4268312	Schuylkill Haven borough	5437	1042.3	2314	127.3	6454723	27324	200998.6	9.8	-8.3	22.31
PA	4268328	Schwenksville borough	1385	1033.7	768	8.4	1309548	9318	49868.9	11.0	-6.7	24.15
PA	4268376	Scotland CDP	1395	293.5	424	20.7	1576690	15403	64647.1	10.8	-6.9	24.15
PA	4268432	Scottdale borough	4384	1156.6	2371	49.1	6753167	26846	198251.2	10.1	-7.9	26.62
PA	4269000	Scranton city	76089	1140.8	34510	1582.0	90361362	365317	4505913.9	8.3	-9.8	30.24
PA	4269216	Selinsgrove borough	5654	868.3	2004	170.9	6247954	36696	197241.3	10.1	-7.7	20.87
PA	4269248	Sellersville borough	4249	1178.6	1688	37.9	3872800	21450	97061.9	10.8	-6.8	24.15
PA	4269256	Seltzer CDP	350	267.2	127	4.2	433172	1812	19729.9	9.2	-8.6	21.85
PA	4269272	Seneca CDP	1065	139.7	546	28.6	2009034	23705	100726.7	8.2	-10.0	25.90
PA	4269309	Seven Fields borough	2887	627.4	1129	32.2	3022623	15115	100212.0	9.6	-8.4	23.09
PA	4269336	Seven Springs borough	26	38.2	486	0.3	887152	15842	42282.8	7.4	-10.2	30.79
PA	4269360	Seven Valleys borough	517	103.5	190	3.2	544780	6383	21544.0	11.1	-6.6	24.15

PA	4269368	Seward borough	495	365.4	150	5.5	508779	5093	23056.3	9.7	-8.8	25.29
PA	4269376	Sewickley borough	3827	1268.2	1908	27.4	4568048	22855	97580.3	10.3	-7.7	21.94
PA	4269400	Sewickley Heights borough	810	90.0	384	5.8	1224730	51965	52285.9	9.9	-7.9	22.35
PA	4269416	Sewickley Hills borough	639	117.9	296	4.6	756094	23829	32273.2	9.9	-8.0	22.34
PA	4269456	Shade Gap borough	105	184.0	34	1.0	99987	570	4328.7	10.1	-7.5	23.48
PA	4269600	Shamokin city	7374	2081.6	4511	140.5	10509501	21222	409648.2	9.3	-8.9	20.42
PA	4269616	Shamokin Dam borough	1686	270.4	832	23.2	2382734	21416	96184.1	10.0	-8.0	21.01
PA	4269680	Shanksville borough	237	141.3	100	2.9	321160	2892	15920.2	7.9	-9.9	25.53
PA	4269715	Shanor-Northvue CDP	5051	265.1	2146	109.7	7013323	74163	294780.2	9.0	-9.2	28.77
PA	4269720	Sharon city	14038	1650.7	7515	266.0	21971411	84408	1023213.7	9.2	-8.9	27.16
PA	4269752	Sharon Hill borough	5697	2293.9	2294	87.1	5491776	16163	192737.1	12.5	-4.5	24.15
PA	4269776	Sharpsburg borough	3446	1637.5	1859	24.6	4266852	11207	97685.7	10.4	-8.0	21.74
PA	4269800	Sharpsville borough	4415	974.9	2002	63.0	6036825	30497	204121.3	9.1	-8.9	27.31
PA	4269816	Shartlesville CDP	455	100.4	205	5.9	577736	9200	25052.4	9.9	-8.1	24.15
PA	4269832	Shavertown CDP	2019	600.3	907	24.6	2945426	21086	102016.2	8.4	-9.4	20.52
PA	4269936	Sheakleyville borough	142	64.7	81	2.0	257126	3034	12135.2	8.4	-9.7	26.77
PA	4269952	Sheatown CDP	671	494.8	230	8.2	715828	4401	33018.5	9.3	-8.9	20.74
PA	4269984	Sheffield CDP	1132	168.8	518	12.5	1571983	16245	80074.9	7.4	-10.7	29.28
PA	4270040	Shelocta borough	130	172.1	49	1.3	129176	2216	5807.3	9.4	-9.1	20.07
PA	4270056	Shenandoah borough	5071	636.7	3114	87.4	6889332	18044	317878.6	8.4	-9.3	20.85
PA	4270064	Shenandoah Heights CDP	1233	919.4	646	14.7	1864653	8065	90381.6	7.9	-9.3	20.65
PA	4270128	Sheppton CDP	239	94.8	90	2.9	276897	1411	13721.7	7.7	-9.5	20.34
PA	4270224	Shickshinny borough	838	365.4	433	10.2	1186651	8361	51809.1	9.3	-8.8	20.67
PA	4270248	Shillington borough	5273	1443.6	2268	119.3	7094223	23865	295753.9	10.6	-7.2	24.15
PA	4270256	Shiloh CDP	11218	813.9	4645	246.3	15049224	86025	577800.3	11.2	-6.3	24.15
PA	4270304	Shinglehouse borough	1127	203.1	492	18.5	1535085	15776	81607.5	7.1	-11.5	25.11
PA	4270352	Shippensburg borough	5492	694.7	2710	33.3	5945569	36296	192905.6	10.8	-6.9	24.15
PA	4270362	Shippensburg University CDP	2625	2674.4	92	15.9	209522	5690	9336.8	10.9	-6.8	24.15
PA	4270368	Shippenville borough	480	229.9	258	7.4	797426	5726	39334.9	8.2	-10.2	26.46
PA	4270376	Shippingport borough	214	29.9	63	1.7	208320	17698	9247.0	10.0	-8.1	26.00
PA	4270384	Shiremanstown borough	1569	1482.1	770	9.5	1818026	7554	66988.9	11.1	-6.4	24.15
PA	4270408	Shirleysburg borough	150	102.6	48	1.4	163838	2254	6889.4	10.6	-7.6	21.40
PA	4270464	Shoemakersville borough	1378	441.1	604	18.0	1644765	11147	66249.7	10.3	-7.7	24.15
PA	4270568	Shrewsbury borough	3823	603.1	1459	23.9	4081858	33325	96213.0	10.6	-6.8	24.15
PA	4270640	Sidman CDP	431	125.1	201	4.8	563643	11031	26812.5	8.7	-9.4	24.30
PA	4270652	Sierra View CDP	4813	270.6	1800	66.4	6530182	83094	305153.9	7.8	-9.7	23.63
PA	4270664	Siglerville CDP	106	35.5	51	1.2	166702	1906	7019.3	10.1	-8.1	19.57
PA	4270704	Silkworth CDP	820	88.2	334	10.0	1126909	21126	50300.7	8.3	-9.4	20.93
PA	4270744	Silverdale borough	871	479.4	304	7.8	849731	6040	35171.7	10.7	-6.8	24.15
PA	4270840	Simpson CDP	1275	433.3	681	14.7	1838293	15216	85069.1	7.5	-11.4	17.99
PA	4270880	Sinking Spring borough	4008	911.1	1675	52.3	4202180	22666	96974.1	10.6	-7.3	24.15
PA	4271008	Skippack CDP	3758	369.4	1313	47.5	4029770	33498	94615.8	11.1	-6.5	24.15
PA	4271032	Skyline View CDP	4003	316.7	1365	51.5	4385044	47907	94106.9	10.8	-6.6	24.15
PA	4271056	Slabtown CDP	156	58.3	82	1.9	259664	6853	11732.0	9.1	-8.9	19.74
PA	4271080	Slatedale CDP	455	99.9	185	3.6	518188	5456	21749.7	9.9	-7.9	24.15
PA	4271144	Slatington borough	4232	1016.7	1921	35.1	4484556	24293	98268.9	10.1	-7.9	24.15
PA	4271160	Slickville CDP	388	124.8	157	3.4	470419	6577	21091.8	9.4	-9.0	19.96
PA	4271176	Sligo borough	720	170.3	293	11.2	986561	11843	48707.9	8.6	-9.9	25.76
PA	4271184	Slippery Rock borough	3625	679.8	1457	40.4	3197641	20298	101890.0	8.6	-9.5	28.81
PA	4271210	Slippery Rock University CDP	1898	829.1	11	20.3	371377	6529	24781.0	8.7	-9.5	29.00
PA	4271232	Slovan CDP	555	212.5	270	6.1	804217	8816	35723.0	9.7	-8.3	28.86
PA	4271248	Smethport borough	1655	250.3	675	23.5	2045218	24177	103380.7	7.0	-11.4	27.38

PA	4271256	Smicksburg borough	46	47.0	18	0.5	60969	2075	2864.6	8.7	-9.7	21.14
PA	4271320	Smithfield borough	875	312.3	326	8.4	969282	10611	40499.0	10.6	-7.3	29.15
PA	4271424	Smithton borough	399	268.5	246	4.5	778376	2434	32381.3	10.4	-7.6	22.31
PA	4271456	Smock CDP	583	90.8	270	5.6	839342	11277	34913.8	10.5	-7.2	22.18
PA	4271504	Smoketown CDP	357	309.2	126	14.0	561704	4823	23666.6	11.1	-6.6	24.15
PA	4271600	Snow Shoe borough	765	255.5	248	7.9	836607	10818	41255.4	7.9	-9.5	21.12
PA	4271688	Snydertown borough	339	36.3	100	3.3	342324	17456	15230.6	9.7	-8.4	19.38
PA	4271694	Snydertown CDP	483	20.3	162	5.0	566535	15834	25705.3	9.3	-8.6	17.12
PA	4271776	Somerset borough	6277	719.5	2926	294.0	9740361	54385	530815.2	8.0	-9.9	32.17
PA	4271848	Soudersburg CDP	540	180.9	261	21.2	987164	6041	40848.6	11.1	-6.7	24.15
PA	4271856	Souderton borough	6618	1673.0	2803	140.9	7506755	28852	295118.4	10.7	-6.8	24.15
PA	4271976	South Bethlehem borough	481	454.0	256	6.4	785736	3928	37559.1	8.7	-10.1	19.93
PA	4272072	South Coatesville borough	1303	254.0	607	7.8	1581148	15021	61981.5	11.1	-6.3	24.15
PA	4272080	South Connellsville borough	1970	344.1	753	18.8	2406036	18654	97309.0	9.7	-8.6	29.34
PA	4272168	South Fork borough	928	619.3	400	12.3	1214121	9147	52185.5	9.0	-9.0	24.24
PA	4272192	South Greensburg borough	2117	1013.1	1119	23.7	3215562	16153	98314.8	9.9	-8.5	29.17
PA	4272216	South Heights borough	475	421.2	180	3.7	533400	7363	22921.5	10.3	-7.7	22.32
PA	4272344	Southmont borough	2284	1134.3	1056	30.3	3225861	20702	101225.8	9.1	-8.7	25.27
PA	4272376	South New Castle borough	709	509.5	264	3.8	837949	7248	36777.6	9.4	-8.6	29.01
PA	4272403	South Park Township CDP	13416	567.3	5640	130.7	16336994	117547	675150.8	10.2	-7.8	22.49
PA	4272416	South Philipsburg CDP	410	415.3	181	4.2	601134	5387	29077.1	8.0	-9.7	24.88
PA	4272432	South Pottstown CDP	2081	512.4	970	50.5	2332982	25782	92571.7	11.0	-6.7	24.15
PA	4272448	South Renovo borough	439	249.4	247	4.6	770063	4146	35891.7	8.4	-9.7	21.71
PA	4272520	South Temple CDP	1424	1570.4	684	34.7	2423044	8588	97945.8	10.5	-7.7	24.15
PA	4272552	South Uniontown CDP	1360	1176.0	595	32.7	2268318	8930	100039.2	10.5	-7.1	23.66
PA	4272576	Southview CDP	276	99.1	111	3.0	382612	7909	17061.0	9.9	-8.1	26.07
PA	4272592	South Waverly borough	1027	617.5	432	14.5	1438411	14587	68330.7	8.4	-9.7	24.16
PA	4272616	Southwest Greensburg borough	2155	1204.2	1151	24.1	2994844	9624	99181.2	10.0	-8.5	28.24
PA	4272648	South Williamsport borough	6379	857.2	2895	112.3	8400634	44645	301102.0	9.5	-8.6	26.82
PA	4272704	Spartansburg borough	305	108.9	130	3.1	416055	5919	20460.3	7.7	-10.3	24.92
PA	4272736	Speers borough	1154	384.1	560	12.7	1797651	13565	75492.0	10.6	-7.3	25.14
PA	4272768	Spinnerstown CDP	1826	244.5	586	24.3	2038829	19299	81368.1	10.2	-7.3	24.15
PA	4272872	Springboro borough	477	171.3	176	4.9	529353	5389	24813.7	8.6	-9.4	25.21
PA	4272920	Spring City borough	3323	1230.2	1607	19.8	3054554	16013	95975.4	11.2	-6.5	24.15
PA	4272960	Springdale borough	3405	1089.3	1807	24.4	4780765	20683	193459.8	10.1	-8.5	20.99
PA	4273192	Spring Grove borough	2167	610.6	955	13.6	2432921	16586	94262.9	11.3	-6.5	24.15
PA	4273224	Spring Hill CDP	839	246.0	460	11.1	1537031	12556	70048.3	8.1	-9.9	24.89
PA	4273264	Spring House CDP	3804	542.1	1478	102.9	4687073	41315	188474.1	11.4	-5.8	24.15
PA	4273288	Spring Mills CDP	268	84.0	108	2.8	332658	4673	14893.2	9.4	-8.5	18.69
PA	4273296	Springmont CDP	724	1649.0	211	9.6	649630	4284	28216.3	10.6	-7.2	24.15
PA	4273312	Spring Mount CDP	2259	622.7	1004	13.7	2426950	10967	95815.5	11.0	-6.8	24.15
PA	4273318	Spring Ridge CDP	1003	552.6	552	13.3	1366736	12696	49744.4	10.6	-7.2	24.15
PA	4273528	Spry CDP	4891	680.0	2049	91.4	6000667	46438	193558.6	10.8	-6.7	24.15
PA	4273704	Starbrick CDP	522	121.7	106	5.8	404676	16397	20739.9	8.2	-10.2	28.10
PA	4273720	Star Junction CDP	616	129.1	391	5.9	872759	9325	36330.4	10.2	-7.7	21.13
PA	4273784	Starrucca borough	173	8.4	99	2.1	330394	28760	17359.7	6.6	-12.1	23.09
PA	4273808	State College borough	42034	2629.4	13340	740.5	24164729	93006	1031480.7	9.5	-8.0	21.01
PA	4273848	State Line CDP	2709	224.4	790	26.1	2554054	30831	91254.4	11.1	-6.7	24.15
PA	4273888	Steelton borough	5990	998.9	2515	70.6	6122285	29836	192697.1	11.4	-6.2	24.15
PA	4274040	Stevens CDP	612	152.1	193	5.1	545540	9606	22315.7	10.7	-7.1	24.15
PA	4274104	Stewartstown borough	2089	440.0	887	13.1	2433633	15866	96957.5	10.8	-6.5	24.15

PA	4274160	Stiles CDP	1113	1564.5	405	27.3	1276104	5510	51742.9	10.5	-7.2	24.15
PA	4274184	Stillwater borough	209	23.3	123	2.6	349780	15666	15951.7	8.9	-9.1	20.94
PA	4274224	Stockdale borough	502	450.1	271	5.5	861511	5330	35426.0	10.9	-7.4	22.84
PA	4274232	Stockertown borough	927	253.5	328	6.9	1021159	13037	43321.0	10.1	-7.6	24.15
PA	4274288	Stoneboro borough	1051	151.9	459	15.0	1439554	20112	66811.0	8.5	-9.7	26.76
PA	4274360	Stonerstown CDP	376	468.4	181	4.8	596257	5845	25656.2	10.2	-7.8	23.17
PA	4274416	Stonybrook CDP	2384	404.6	782	63.4	3386917	27989	95577.0	11.1	-6.5	24.15
PA	4274448	Stony Creek Mills CDP	1045	527.1	351	12.9	1083032	8785	47116.1	10.3	-7.5	24.15
PA	4274544	Stormstown CDP	2366	88.1	767	24.4	2731694	45711	96597.7	8.8	-8.5	22.78
PA	4274568	Stouchsburg CDP	600	137.7	248	7.8	765566	13725	32291.9	10.4	-7.6	24.15
PA	4274660	Stowe CDP	3695	732.5	1502	22.4	4136243	24702	95847.4	11.0	-6.8	24.15
PA	4274672	Stoystown borough	355	250.5	177	4.3	454398	4466	21590.7	8.4	-9.5	30.68
PA	4274712	Strasburg borough	2809	602.9	1091	18.2	2914809	19081	95743.0	11.0	-6.7	24.15
PA	4274728	Strattanville borough	550	127.2	214	8.5	689413	8246	35359.6	8.0	-10.4	27.75
PA	4274744	Strausstown borough	342	140.1	145	4.5	407163	2771	17487.2	10.1	-7.8	24.15
PA	4274848	Strodes Mills CDP	757	67.1	249	8.3	832299	15881	34809.3	10.4	-7.7	18.84
PA	4274864	Strong CDP	147	263.0	128	1.4	311676	1086	13876.7	8.9	-9.0	20.50
PA	4274888	Stroudsburg borough	5567	973.9	2288	487.5	9759885	35675	395663.9	9.6	-8.7	24.15
PA	4274944	Sturgeon CDP	1710	291.3	573	21.8	1884509	17373	80787.8	10.1	-8.0	22.80
PA	4275000	Sugarcreek borough	5294	60.8	2227	79.7	7917790	175942	378200.5	8.4	-9.8	26.65
PA	4275024	Sugar Grove borough	614	176.6	282	6.8	899301	9340	44425.3	7.8	-9.9	25.68
PA	4275072	Sugar Notch borough	989	163.3	470	12.1	1269097	9455	52255.5	8.7	-9.5	20.89
PA	4275136	Summerhill borough	490	252.6	211	6.5	687862	7343	32973.0	8.8	-9.1	24.92
PA	4275168	Summerville borough	528	202.1	242	8.2	833861	10696	41370.8	8.4	-10.0	20.98
PA	4275248	Summit Hill borough	3034	94.8	1378	34.3	3765906	35555	101475.7	8.5	-8.8	21.62
PA	4275272	Summit Station CDP	174	38.7	53	2.1	188876	10748	8556.8	9.5	-8.4	24.15
PA	4275304	Sunbury city	9905	1417.0	5176	245.0	13157799	42685	605006.1	9.9	-8.0	20.62
PA	4275381	Sunrise Lake CDP	1387	180.9	413	10.4	1442911	22672	80458.9	7.6	-11.0	24.58
PA	4275432	Sun Valley CDP	2399	211.8	886	33.1	3121385	49364	96981.3	8.4	-9.6	22.92
PA	4275568	Susquehanna Depot borough	1643	346.6	756	23.0	2083337	15349	102848.0	7.7	-11.0	24.06
PA	4275574	Susquehanna Trails CDP	2264	215.3	1048	14.2	3348941	51359	88685.7	11.4	-6.2	24.15
PA	4275584	Sutersville borough	605	351.3	268	6.8	875204	7050	36647.1	10.7	-7.6	18.46
PA	4275648	Swarthmore borough	6194	1797.6	1983	86.9	5745559	30821	189042.4	12.2	-4.8	24.15
PA	4275664	Swartzville CDP	2283	399.3	844	38.3	2925543	23056	95574.0	10.6	-7.3	24.15
PA	4275728	Sweden Valley CDP	223	37.8	97	3.7	343586	9066	18488.6	6.9	-11.4	24.55
PA	4275816	Swissvale borough	8983	2542.4	5178	127.1	12356677	26707	494976.3	10.3	-7.9	19.49
PA	4275832	Swoyersville borough	5062	1369.5	2450	61.8	7433759	30108	306138.9	9.3	-8.5	20.62
PA	4275888	Sykesville borough	1157	133.3	660	18.0	1895454	16227	86374.6	8.1	-9.8	26.96
PA	4275944	Sylvania borough	219	36.7	107	3.1	350389	5043	17761.9	7.7	-10.6	23.89
PA	4275968	Table Rock CDP	62	70.5	20	0.6	69247	631	2808.8	11.0	-6.6	24.15
PA	4276032	Tamaqua borough	7107	229.2	3411	133.5	8273193	39132	312578.6	8.6	-8.9	21.61
PA	4276104	Tarentum borough	4530	1484.9	2186	32.4	5412641	25046	195231.6	10.0	-8.5	21.12
PA	4276144	Tatamy borough	1203	455.6	415	8.9	1201395	11283	50286.6	10.1	-7.6	24.15
PA	4276184	Taylor borough	6263	605.4	2647	97.3	7601543	54533	301886.5	8.9	-9.2	24.00
PA	4276232	Taylorstown CDP	217	34.4	50	2.4	163850	5815	7623.4	9.9	-8.2	23.14
PA	4276304	Telford borough	4872	1874.8	1988	43.5	4768284	21706	98610.7	10.7	-6.8	24.15
PA	4276320	Temple CDP	1877	1378.4	863	45.8	2299978	8094	97765.6	10.5	-7.7	24.15
PA	4276336	Templeton CDP	325	156.0	188	4.3	567811	5848	26635.3	8.9	-9.7	22.41
PA	4276400	Terre Hill borough	1295	424.0	483	8.4	1420869	8753	50920.4	10.7	-6.9	24.15
PA	4276432	Tharptown (Uniontown) CDP	498	362.3	198	4.3	545082	2749	23990.8	9.5	-8.7	20.26
PA	4276440	The Hideout CDP	3013	115.6	3250	36.9	10372101	84015	416505.5	7.3	-11.2	27.21
PA	4276496	Thompson borough	299	143.3	145	4.2	439676	5479	23093.9	6.7	-12.1	23.05
PA	4276536	Thompsontown borough	697	430.4	288	8.7	715503	6434	29646.1	10.6	-7.7	22.40
PA	4276552	Thompsonville CDP	3520	538.0	1244	95.8	5217408	35891	195045.7	10.2	-7.9	25.56
PA	4276560	Thornburg borough	455	693.9	177	3.3	571195	7267	23663.6	10.5	-7.8	21.49

PA	4276584	Thorndale CDP	3407	652.5	1474	45.1	4146441	33585	94844.5	11.2	-6.4	24.15
PA	4276632	Three Springs borough	444	109.0	161	4.1	427077	7449	18088.2	10.3	-7.3	22.74
PA	4276648	Throop borough	4088	235.0	1871	47.3	5163642	38776	204199.0	8.0	-10.5	26.30
PA	4276696	Tidioute borough	688	121.6	463	7.6	1294820	12420	61818.9	8.1	-10.3	26.50
PA	4276724	Timber Hills CDP	360	172.8	175	2.8	565294	7993	23599.3	10.4	-7.2	24.15
PA	4276744	Timblin borough	157	31.5	79	2.4	267521	6991	13162.5	8.4	-10.2	24.35
PA	4276808	Tioga borough	666	150.2	245	10.2	806683	6366	40787.4	8.1	-10.6	24.23
PA	4276848	Tionesta borough	483	87.4	279	4.7	729742	9634	35193.8	7.8	-10.6	26.37
PA	4276880	Tipton CDP	1083	230.0	376	7.3	1144880	20628	48168.6	9.4	-8.6	25.73
PA	4276904	Titusville city	5601	667.0	2818	189.0	9324942	44093	420841.1	7.9	-10.4	25.13
PA	4277016	Toftrees CDP	2053	716.2	1347	15.0	1791036	13072	68944.7	9.3	-7.9	21.20
PA	4277104	Topton borough	2069	672.1	808	27.0	2203378	13845	94836.6	10.1	-8.0	24.15
PA	4277144	Toughkenamon CDP	1492	258.7	243	17.1	1031612	18756	42439.2	11.4	-5.7	24.15
PA	4277163	Towamensing Trails CDP	2292	82.3	1872	11.5	5754559	104620	197973.3	7.4	-10.3	24.60
PA	4277168	Towanda borough	2919	799.5	1295	41.1	3465661	26141	101567.5	8.6	-9.4	25.52
PA	4277184	Tower City borough	1346	778.6	664	16.1	1917174	8138	83495.9	9.8	-8.4	22.34
PA	4277232	Townville borough	323	124.6	144	3.3	411480	4505	19959.8	7.9	-10.2	26.40
PA	4277272	Trafford borough	3174	601.9	1628	35.6	4444444	20000	97982.0	10.2	-8.2	30.06
PA	4277288	Trainer borough	1828	630.8	663	7.5	1663581	13895	59534.1	12.5	-4.5	24.15
PA	4277304	Trappe borough	3509	649.5	1384	21.3	3369089	28707	94633.4	11.0	-6.6	24.15
PA	4277335	Treasure Lake CDP	3861	181.5	2150	60.0	7205735	142871	293930.3	7.6	-10.1	30.68
PA	4277392	Tremont borough	1752	780.2	727	20.9	1925599	13954	83740.5	9.4	-8.5	22.20
PA	4277424	Tresckow CDP	880	183.2	405	10.0	1119695	10471	55822.3	7.5	-9.5	20.69
PA	4277448	Trevorton CDP	1834	170.6	936	17.9	2739484	27785	96975.3	9.3	-8.7	20.43
PA	4277456	Trevose CDP	3550	1588.5	1358	161.8	4871842	18074	192680.0	11.4	-5.8	24.15
PA	4277488	Trexlertown CDP	1988	306.4	688	53.3	1492530	26687	61671.9	10.4	-7.3	24.15
PA	4277520	Trooper CDP	5744	929.8	1988	93.0	7319482	47716	286690.9	11.2	-6.2	24.15
PA	4277568	Troutville borough	243	85.3	102	2.1	337703	5497	16325.9	8.0	-9.9	27.48
PA	4277576	Troxelville CDP	221	53.2	86	3.0	278853	6207	12046.1	10.1	-8.1	24.31
PA	4277584	Troy borough	1354	381.9	746	19.1	1965953	12648	87351.3	8.1	-9.9	24.82
PA	4277656	Trucksville CDP	2152	369.9	929	26.2	2880747	27247	100559.6	8.4	-9.3	20.54
PA	4277704	Trumbauersville borough	974	488.6	372	8.7	1058738	5385	44721.4	10.3	-7.1	24.15
PA	4277744	Tullytown borough	1872	314.9	722	16.7	1987436	21651	76926.6	11.7	-5.5	24.15
PA	4277784	Tunkhannock borough	1836	616.0	851	28.6	2212279	16510	100000.2	9.0	-9.0	21.74
PA	4277808	Tunnelhill borough	363	113.1	134	4.8	483120	4489	25304.9	7.6	-9.8	24.45
PA	4277832	Turbotville borough	705	211.2	384	6.9	1049204	7574	45630.2	9.6	-8.5	23.02
PA	4277912	Turtle Creek borough	5349	1653.7	3281	93.1	8440045	23490	292655.8	10.3	-8.1	18.58
PA	4277968	Tuscarora CDP	980	68.6	47	0.6	149574	1001	56466.1	8.9	-9.0	21.68
PA	4278008	Twilight borough	233	106.2	100	2.6	329794	8571	14213.5	10.3	-7.5	24.83
PA	4278115	Tyler Run CDP	1901	659.9	849	35.5	2370993	17396	96339.5	11.0	-6.6	24.15
PA	4278120	Tylersburg CDP	196	45.6	61	3.0	230274	4927	12326.0	7.6	-10.7	23.40
PA	4278168	Tyrone borough	5477	870.5	2467	128.6	7373324	34389	304892.3	9.4	-8.4	24.89
PA	4278240	Ulysses borough	621	56.3	293	10.2	808367	15590	44494.8	6.3	-11.6	30.26
PA	4278448	Union City borough	3320	438.1	1345	19.4	3533859	27642	103429.7	8.1	-9.7	25.04
PA	4278456	Union Dale borough	267	41.2	144	3.7	478519	11696	25259.4	6.5	-12.0	20.52
PA	4278472	Union Deposit CDP	407	196.2	217	2.5	633406	4428	24773.3	11.1	-6.6	24.15
PA	4278528	Uniontown city	10372	1828.8	5302	449.5	18227598	51919	901794.3	10.4	-7.3	24.58
PA	4278608	Unionville CDP	962	160.7	265	20.9	1123216	20532	56443.9	8.8	-9.4	32.43
PA	4278616	Unionville borough	291	176.7	128	3.0	403200	3898	17675.5	9.7	-8.3	21.50
PA	4278712	Upland borough	3239	2060.9	1342	13.2	3017076	12176	95734.9	12.4	-4.6	24.15
PA	4279016	Upper Exeter CDP	707	146.6	247	8.6	858252	13317	40735.8	8.8	-9.0	19.23
PA	4279277	Upper St. Clair CDP	19229	809.8	7147	391.7	26191146	162338	1167714.9	10.1	-7.9	23.73
PA	4279424	Ursina borough	225	50.0	93	2.7	312112	8939	14090.0	9.4	-8.8	24.23
PA	4279472	Utica borough	189	49.6	86	1.1	267573	8732	12293.2	8.5	-9.6	26.80
PA	4279504	Valencia borough	551	258.1	207	6.1	546879	5286	24304.9	9.7	-8.5	22.84
PA	4279640	Valley Green CDP	3429	549.9	1395	26.6	3675044	26006	95264.3	11.2	-6.2	24.15

PA	4279644	Valley-Hi borough	15	9.9	20	0.2	62610	1500	2715.3	9.4	-8.1	23.36
PA	4279680	Valley View CDP (Schuylkill County)	1683	179.4	746	20.1	2365278	29210	94602.9	9.7	-8.3	22.01
PA	4279682	Valley View CDP (York County)	2817	1043.0	1274	62.3	4664061	19529	196782.1	11.0	-6.6	24.15
PA	4279768	Vanderbilt borough	476	187.4	179	4.5	595885	4246	25342.6	10.3	-7.5	24.54
PA	4279776	Vandergrift borough	5205	1359.4	2645	84.2	7878151	27083	297098.1	9.6	-9.0	19.38
PA	4279792	Vandling borough	751	144.9	291	8.7	891920	9819	46376.9	7.1	-11.8	18.31
PA	4279872	Van Voorhis CDP	166	103.4	140	1.8	448155	5319	18544.8	10.5	-7.7	27.13
PA	4279912	Venango borough	239	163.9	113	2.5	370236	4254	17398.4	8.4	-9.5	25.66
PA	4280032	Verona borough	2474	2175.7	1346	17.7	2869989	12393	96879.1	10.2	-8.5	23.00
PA	4280040	Versailles borough	1515	747.1	883	10.8	2079253	8878	80743.6	10.6	-7.8	19.62
PA	4280144	Vicksburg CDP	261	90.6	92	3.1	326658	6405	14876.8	10.0	-8.1	23.61
PA	4280218	Village Green-Green Ridge CDP	7822	1418.8	2837	147.3	10232147	42145	385008.3	12.2	-4.7	24.15
PA	4280229	Village Shires CDP	3949	1088.5	1878	82.4	4696935	24987	95912.2	11.4	-5.9	24.15
PA	4280264	Vinco CDP	1305	136.2	653	17.3	2230775	27595	99221.6	8.5	-9.5	27.18
PA	4280288	Vintondale borough	414	198.8	211	5.5	671713	6275	31756.1	8.9	-9.5	29.52
PA	4280336	Virginville CDP	309	77.5	126	4.0	442316	9501	18986.5	10.2	-7.7	24.15
PA	4280368	Volant borough	168	84.2	59	0.9	179699	1354	8085.1	9.0	-9.3	27.01
PA	4280384	Vowinckel CDP	139	17.4	58	2.2	207187	14448	10877.7	7.5	-10.7	24.94
PA	4280432	Wagner CDP	128	28.8	62	1.4	186687	7815	7852.3	10.1	-8.3	22.74
PA	4280480	Wakefield CDP	609	92.7	187	3.9	618591	13812	24109.4	11.4	-6.2	24.15
PA	4280600	Wall borough	580	192.6	324	4.1	910305	7598	38121.3	10.1	-8.1	22.35
PA	4280640	Wallaceton borough	313	168.5	88	2.8	305833	9101	15431.8	7.6	-9.9	26.33
PA	4280652	Wallenpaupack Lake Estates CDP	1279	158.2	1536	15.7	4857390	33974	207505.7	7.5	-11.1	27.24
PA	4280656	Waller CDP	48	17.8	31	0.6	98073	11704	4622.9	8.3	-9.4	21.47
PA	4280800	Walnutport borough	2070	695.2	882	15.4	2271537	18725	94921.8	10.2	-7.7	24.15
PA	4280808	Walnuttown CDP	484	175.3	136	6.3	510152	6192	22255.2	10.2	-7.9	24.15
PA	4280880	Wampum borough	717	181.2	362	3.8	1009635	10832	43102.5	9.7	-8.4	29.46
PA	4280896	Wanamie CDP	612	157.9	272	7.5	752741	9235	34508.2	9.0	-9.1	20.72
PA	4280962	Warminster Heights CDP	4124	2302.0	1662	81.9	3629035	13642	97712.4	11.4	-5.9	24.15
PA	4281000	Warren city	9710	1100.0	4697	308.0	14781654	61907	734962.6	8.1	-10.2	30.66
PA	4281080	Warrior Run borough	584	156.3	259	7.1	788306	6100	36581.9	8.9	-9.2	20.84
PA	4281328	Washington city	13663	1708.3	7179	600.9	23326965	70133	1114088.7	10.0	-8.2	32.22
PA	4281360	Washington Boro CDP	729	117.3	267	7.7	902061	15371	35950.9	11.2	-6.6	24.15
PA	4281424	Washingtonville borough	273	8.0	125	4.7	352176	1403	16462.9	9.7	-8.8	21.28
PA	4281456	Waterford borough	1517	431.1	561	8.8	1503478	20867	68010.5	8.3	-9.2	28.70
PA	4281616	Watsontown borough	2351	730.3	1128	22.9	3009615	15056	99197.4	9.8	-8.2	23.85
PA	4281648	Wattsburg borough	403	94.0	127	2.3	380737	4586	18090.3	8.2	-9.7	25.43
PA	4281664	Waverly CDP	604	155.5	204	7.0	710325	14781	35398.4	7.9	-10.3	18.58
PA	4281712	Waymart borough	1341	203.6	488	16.4	1586164	20702	82861.1	7.2	-11.3	20.22
PA	4281808	Wayne Heights CDP	2545	306.4	1114	28.8	3222749	25974	93831.8	11.0	-7.0	24.15
PA	4281824	Waynesboro borough	10568	988.4	4699	238.0	12412103	61569	485957.0	11.0	-6.7	24.15
PA	4281832	Waynesburg borough	4176	1424.0	1607	51.7	4131598	18988	98302.0	10.2	-7.8	27.75
PA	4281856	Weatherly borough	2525	285.7	1012	28.6	3040203	26614	100859.3	8.4	-9.5	21.27
PA	4281936	Webster CDP	255	209.9	110	3.9	388007	5834	16319.7	10.5	-7.7	19.53
PA	4281960	Weedville CDP	542	62.4	230	9.0	744361	17083	38130.7	8.0	-10.0	29.62
PA	4282008	Weigelstown CDP	12875	643.3	4391	100.6	12975213	100886	473640.7	11.2	-6.3	24.15
PA	4282080	Weissport borough	412	736.5	218	4.7	493668	2420	21245.2	10.0	-8.1	21.64
PA	4282088	Weissport East CDP	1624	304.2	709	18.4	2154058	30624	93178.6	9.8	-8.2	21.59
PA	4282128	Wellersburg borough	181	42.8	111	2.2	352418	6674	15291.0	9.7	-8.6	25.29
PA	4282160	Wellsboro borough	3263	263.4	1624	50.0	4420805	42262	208402.1	7.6	-10.2	26.49
PA	4282200	Wellsville borough	242	63.0	107	1.5	265477	3436	10421.8	11.2	-6.3	24.15
PA	4282296	Wernersville borough	2494	981.5	881	32.5	2645412	15504	96944.2	10.5	-7.4	24.15
PA	4282320	Wescosville CDP	5872	721.2	2080	68.8	6295415	48180	192856.5	10.4	-7.3	24.15
PA	4282344	Wesleyville borough	3341	1968.3	1150	19.5	3184685	13119	104131.8	9.0	-8.5	23.74

PA	4282376	West Alexander CDP	604	148.9	308	6.7	1017768	12529	44961.2	9.8	-8.2	24.15
PA	4282616	West Brownsville borough	992	585.4	464	11.0	1474684	17609	61660.6	10.7	-7.3	24.88
PA	4282704	West Chester borough	18461	3163.2	6877	582.2	16096193	44653	597541.3	11.2	-5.8	24.15
PA	4282736	West Conshohocken borough	1320	605.1	630	8.0	1537366	18155	57848.3	11.7	-5.6	24.15
PA	4282792	West Decatur CDP	533	108.0	189	4.7	583653	12458	28688.8	7.8	-9.8	29.35
PA	4282832	West Easton borough	1257	1318.8	505	9.3	1395376	7328	51076.3	10.4	-7.5	24.15
PA	4282848	West Elizabeth borough	518	1218.6	223	3.7	643925	5104	26177.8	10.8	-7.7	21.52
PA	4282920	West Fairview CDP	1282	1324.5	570	17.1	1411180	7750	59421.4	11.2	-6.2	24.15
PA	4282952	West Falls CDP	382	132.9	223	6.0	689753	9806	31710.5	9.2	-9.0	19.26
PA	4282968	Westfield borough	1064	271.9	599	16.3	1697097	11054	87335.7	7.4	-10.8	27.09
PA	4283104	West Grove borough	2854	1207.0	1003	17.0	2603748	13324	96728.5	11.3	-5.9	24.15
PA	4283120	West Hamburg CDP	1979	295.0	492	25.8	1718488	35635	75183.5	10.0	-8.0	24.15
PA	4283136	West Hazleton borough	4594	554.8	1978	56.1	5109267	18656	215892.7	7.8	-9.7	20.61
PA	4283172	West Hills CDP	1263	360.6	704	16.7	2062070	35976	93369.9	9.0	-9.2	22.49
PA	4283200	West Homestead borough	1929	1410.1	1038	51.3	3379106	15957	97614.9	10.3	-7.9	19.92
PA	4283248	West Kittanning borough	1175	909.6	644	15.5	2013128	10526	83790.8	9.2	-9.2	21.38
PA	4283272	Westland CDP	167	167.1	48	1.8	154874	2183	6973.3	10.0	-8.1	28.90
PA	4283280	West Lawn CDP	1715	2129.7	669	22.7	1835437	5394	77620.4	10.6	-7.2	24.15
PA	4283328	West Leechburg borough	1294	645.3	615	14.5	2013678	19811	80093.4	9.7	-9.0	20.52
PA	4283376	West Liberty borough	343	29.6	142	3.8	484302	20748	22674.7	8.8	-9.4	29.58
PA	4283472	West Mayfield borough	1239	880.0	504	9.6	1489436	13627	65586.0	9.8	-8.2	28.71
PA	4283496	West Middlesex borough	863	300.7	366	12.3	1143616	10236	51297.0	9.4	-8.6	26.01
PA	4283504	West Middletown borough	139	51.6	74	1.5	235200	3522	10374.8	9.7	-8.3	27.08
PA	4283512	West Mifflin borough	20313	682.3	9212	461.0	29956909	173795	1265650.8	10.1	-7.8	21.20
PA	4283520	West Milton CDP	900	192.4	341	10.6	980929	8584	44571.9	9.9	-8.1	23.29
PA	4283584	Westmont borough	5181	872.5	2333	37.6	7217638	44512	310843.9	8.7	-8.8	25.78
PA	4283656	West Nanticoke CDP	749	340.5	315	9.1	962519	12435	43687.6	9.4	-8.9	20.74
PA	4283680	West Newton borough	2633	695.7	1343	29.5	3904846	23659	95694.0	10.5	-7.7	20.54
PA	4283720	Weston CDP	321	76.2	163	3.9	540184	7135	25993.0	8.2	-9.6	20.30
PA	4283736	Westover borough	390	28.7	142	3.5	469934	16199	22307.0	8.4	-9.9	26.88
PA	4283848	West Pittsburg CDP	808	232.5	271	4.3	767653	9851	33479.3	9.5	-8.4	29.38
PA	4283856	West Pittston borough	4868	2184.0	2400	59.4	6550224	22850	255656.6	9.4	-8.9	20.59
PA	4283928	West Reading borough	4212	2353.8	1831	196.9	4994317	14781	198326.1	10.8	-7.1	24.15
PA	4284064	West Sunbury borough	192	111.2	51	2.1	173705	2144	8442.1	8.7	-9.5	27.93
PA	4284144	West View borough	6771	1801.1	3290	107.5	8848046	25120	302951.2	9.9	-8.1	21.99
PA	4284176	West Waynesburg CDP	446	401.5	134	10.0	501329	4476	24863.2	10.3	-7.9	26.00
PA	4284248	Westwood CDP	950	396.0	252	12.5	847725	8797	35908.9	11.0	-6.4	24.15
PA	4284272	West Wyoming borough	2725	415.8	1194	33.3	3996505	21077	103043.0	8.9	-8.7	20.51
PA	4284280	West Wyomissing CDP	3407	1443.8	1598	45.0	4800576	20105	196181.3	10.6	-7.2	24.15
PA	4284288	West York borough	4617	1620.0	2249	28.9	4769161	13580	97459.7	11.3	-6.4	24.15
PA	4284376	Wheatland borough	632	99.7	330	9.0	1010877	10868	44900.9	9.5	-8.6	27.24
PA	4284440	Whitaker borough	1271	1993.1	629	9.1	1883171	6956	78777.8	10.2	-7.9	19.33
PA	4284512	Whitehall borough	13944	1626.0	6438	124.9	17598625	74384	687843.0	10.0	-8.0	21.29
PA	4284552	White Haven borough	1097	228.3	479	13.4	1415752	15465	68521.7	8.2	-9.7	21.87
PA	4284696	White Mills CDP	659	130.1	247	8.1	841696	14383	42646.3	7.5	-11.3	24.33
PA	4284704	White Oak borough	7862	485.3	3828	178.1	13113870	76852	587933.6	10.1	-8.0	20.47
PA	4284856	Whitfield CDP	4733	1784.7	1933	62.5	6210992	25775	196594.7	10.6	-7.2	24.15
PA	4284931	Wickerham Manor-Fisher CDP	1728	250.7	709	19.4	2419633	24345	95215.7	10.3	-7.5	32.33
PA	4284968	Wiconsico CDP	921	235.7	381	9.0	1197808	11194	50267.0	9.9	-8.2	22.40
PA	4285076	Wilburton Number One	196	217.7	102	2.4	283211	2750	13382.2	8.3	-9.4	20.37

PA	4285078	Wilburton Number Two CDP	96	89.4	27	1.2	67912	3544	3308.5	8.1	-9.5	20.43
PA	4285088	Wilcox CDP	383	148.2	189	6.4	606756	8355	32418.7	7.1	-11.0	31.32
PA	4285152	Wilkes-Barre city	41498	2218.9	19467	983.0	52237286	155953	2404974.2	9.3	-9.1	21.06
PA	4285188	Wilkinsburg borough	15930	2838.9	10572	200.6	21855989	55885	897866.4	10.0	-8.3	19.81
PA	4285272	Williamsburg borough	1254	530.3	632	15.7	1580533	7437	68697.7	9.8	-7.8	23.80
PA	4285312	Williamsport city	29381	1243.3	13225	679.0	35443605	171229	1596097.9	9.8	-8.5	27.64
PA	4285320	Williamstown borough	1387	1017.8	610	13.5	1627757	6421	67192.9	9.9	-8.6	22.36
PA	4285408	Willow Grove CDP	15726	1736.1	7078	457.9	21730327	81341	879105.3	11.5	-5.7	24.15
PA	4285464	Willow Street CDP	7578	461.1	3589	96.9	7865037	65154	283124.2	11.1	-6.6	24.15
PA	4285496	Wilmerding borough	2190	1667.3	1215	15.7	2372879	10986	96572.6	10.3	-8.1	19.20
PA	4285528	Wilmore borough	225	145.2	49	3.0	198064	6281	10050.8	8.9	-9.1	25.47
PA	4285592	Wilson borough	7896	2576.8	3646	188.1	9607468	25730	402734.7	10.3	-7.5	24.15
PA	4285632	Windber borough	4138	655.1	2120	50.5	5593232	30515	204701.3	8.7	-9.2	25.43
PA	4285664	Wind Gap borough	2720	592.9	1281	20.2	3156727	22263	99802.2	9.3	-8.5	24.15
PA	4285712	Wind Ridge CDP	215	14.5	92	2.7	321420	14425	14334.3	9.9	-8.2	24.15
PA	4285728	Windsor borough	1319	723.0	588	8.3	1453025	10761	58250.8	10.8	-6.9	24.15
PA	4285792	Winfield CDP	900	105.0	413	10.6	1305163	31447	59113.8	9.7	-8.1	21.91
PA	4285872	Winterstown borough	632	86.9	270	4.0	766740	18293	31071.2	10.6	-6.9	24.15
PA	4285968	Witmer CDP	492	162.6	193	19.3	823447	5662	34670.7	11.0	-6.6	24.15
PA	4286000	Wolfdale CDP	2888	367.1	734	32.9	2676194	29833	95980.1	9.9	-8.1	29.51
PA	4286056	Womelsdorf borough	2810	853.2	1125	36.6	3000512	18620	96514.2	10.4	-7.6	24.15
PA	4286112	Woodbourne CDP	3851	841.4	1274	68.1	4155871	24512	96662.0	11.4	-5.8	24.15
PA	4286128	Woodbury borough	284	150.3	97	3.6	305903	3261	13948.4	9.6	-7.8	23.27
PA	4286160	Woodcock borough	157	59.4	73	1.6	224130	3579	10597.4	8.3	-9.8	25.93
PA	4286224	Woodland Heights CDP	1261	229.3	568	33.9	1848409	16672	98189.5	8.2	-10.0	25.83
PA	4286288	Woodlyn CDP	9485	2337.1	3995	122.3	10299219	39603	384291.4	12.4	-4.6	24.15
PA	4286352	Woodside CDP	2425	898.0	793	37.5	3067115	24458	94949.8	11.4	-5.8	24.15
PA	4286432	Woodward CDP	110	37.6	58	1.1	191856	3832	8772.9	8.8	-9.2	23.57
PA	4286528	Wormleysburg borough	3070	1149.5	1615	18.6	3229053	18846	96770.9	11.2	-6.2	24.15
PA	4286560	Worthington borough	639	351.1	312	8.5	986526	11611	46583.6	9.0	-9.4	19.66
PA	4286568	Worthville borough	67	58.8	32	1.0	112282	2504	5530.4	8.5	-10.1	22.05
PA	4286576	Woxall CDP	1318	178.9	310	8.0	1063257	25756	43890.6	10.7	-6.9	24.15
PA	4286640	Wrightsville borough	2310	982.0	915	14.5	2368140	14645	92480.7	11.3	-6.5	24.15
PA	4286656	Wyalusing borough	596	159.3	275	8.4	790589	8358	37322.7	8.9	-9.2	25.68
PA	4286672	Wyano CDP	484	118.9	150	2.8	478992	12478	19779.3	10.2	-7.9	25.38
PA	4286712	Wylandville CDP	391	92.7	92	6.6	373207	10027	17732.8	10.1	-7.9	28.97
PA	4286744	Wyncote CDP	3044	1472.6	1207	67.2	3493326	18413	96664.1	11.7	-5.3	24.15
PA	4286776	Wyndmoor CDP	5498	1993.3	2148	108.9	7490869	36386	293776.0	11.5	-5.4	24.15
PA	4286856	Wyoming borough	3073	657.3	1625	37.5	4159240	17029	100898.7	9.4	-8.7	20.66
PA	4286880	Wyomissing borough	10461	1097.9	4837	648.0	18922676	91681	885712.9	10.7	-7.1	24.15
PA	4286920	Yardley borough	2434	1056.8	1220	21.7	3030006	18627	95817.4	11.5	-5.7	24.15
PA	4286952	Yatesville borough	607	405.3	286	7.4	934279	6595	43282.1	8.9	-9.2	21.20
PA	4286968	Yeadon borough	11443	3634.8	5219	80.3	10986045	31326	388621.2	12.3	-4.6	24.15
PA	4286976	Yeagertown CDP	1050	751.4	590	17.2	1729180	11189	79942.9	10.3	-7.8	19.18
PA	4287040	Yoe borough	1018	1298.0	445	6.4	929233	5837	37384.9	10.7	-6.9	24.15
PA	4287048	York city	43718	2732.6	19340	863.0	44075548	124520	1756490.4	11.3	-6.4	24.15
PA	4287064	Yorkana borough	229	203.8	100	1.4	286733	2135	11456.2	10.9	-6.6	24.15
PA	4287080	York Haven borough	709	516.4	272	4.4	638901	5677	24804.1	11.4	-6.1	24.15
PA	4287088	Yorklyn CDP	1912	565.9	737	50.9	2531224	11253	97214.1	11.2	-6.5	24.15
PA	4287136	York Springs borough	833	448.1	319	8.4	729913	4395	29342.9	11.0	-6.6	24.15
PA	4287208	Youngstown borough	326	672.0	115	3.7	400486	1840	17898.9	9.8	-8.9	26.93
PA	4287224	Youngsville borough	1729	410.9	934	19.1	2670073	20257	102628.3	8.2	-9.9	26.14
PA	4287232	Youngwood borough	3050	746.2	1593	34.2	4231570	29077	96616.0	10.1	-8.2	26.12
PA	4287240	Yukon CDP	677	198.3	293	3.9	830194	9244	33903.2	10.3	-7.9	24.89
PA	4287272	Zelienople borough	3812	635.0	2114	42.5	4925963	32221	196368.9	9.7	-8.5	24.77

PA	4287320	Zion CDP	2030	136.8	800	20.9	2475889	27288	95457.3	9.5	-8.7	18.82

GeoID	Initial Case LCOH ($/MMBTU)	Prod. Temp.	Power/plant (MWth)	Req'd # Plants	Capacity Factor	Drill Cost /plant (M$)	Surf. Cost /plant (M$)	Mature Case LCOH ($/MMBTU)	Prod. Temp.	Power/plant (MWth)	Req'd # Plants	Capacity Factor	Drill Cost /plant (M$)	Surf. Cost /plant (M$)
3600155	$92.02	75	3.5	1	20.7%	12.69	11.60	$82.44	85	16.6	1	20.7%	12.71	8.30
3600199	$29.06	105	7.4	1	47.0%	25.83	14.40	$20.83	75	13.8	1	47.0%	12.32	13.90
3600232	$39.03	95	5.9	1	47.0%	21.93	20.20	$31.26	75	13.0	1	47.0%	12.33	19.70
3600276	$32.42	105	7.2	1	46.7%	25.53	19.00	$24.22	75	13.4	1	46.7%	12.19	18.40
3600342	$38.25	75	3.8	1	46.3%	14.63	9.50	$31.04	75	14.0	1	40.1%	12.08	9.20
3600408	$32.78	105	7.3	3	44.3%	25.81	16.90	$19.87	95	18.4	3	44.3%	17.93	46.20
3600441	$27.50	105	7.4	1	47.4%	22.13	15.90	$17.97	75	13.3	1	47.4%	10.73	24.30
3601000	$25.06	105	7.6	53	44.5%	23.08	10.30	$12.84	95	20.2	53	44.5%	16.13	28.00
3601011	$25.96	105	7.6	3	44.8%	25.81	9.40	$12.53	95	20.4	3	44.8%	17.92	25.40
3601033	$31.50	105	7.4	2	47.2%	27.55	16.80	$18.73	85	15.8	2	47.2%	15.87	38.50
3601088	$24.82	105	7.4	1	47.7%	18.26	15.70	$18.28	75	13.5	1	47.7%	9.04	19.40
3601154	$65.39	75	3.9	1	23.2%	17.63	4.00	$56.34	75	14.4	1	23.2%	14.47	3.20
3601187	$30.76	95	6.3	1	46.2%	21.92	12.20	$22.41	75	13.9	1	46.2%	12.32	12.50
3601198	$33.32	85	4.9	1	49.2%	17.70	12.80	$26.03	75	13.7	1	49.2%	11.95	12.20
3601286	$22.85	105	7.5	1	48.1%	17.80	13.60	$16.76	75	13.9	1	48.1%	8.85	15.90
3601440	$58.96	75	3.9	1	26.5%	16.10	6.10	$50.95	75	14.2	1	26.5%	13.25	4.80
3601517	$29.10	105	7.5	1	45.0%	26.28	12.10	$18.89	75	13.9	1	45.0%	12.51	14.50
3601550	$144.42	75	3.7	1	11.3%	15.05	6.00	$126.39	75	13.9	1	11.3%	12.38	5.50
3601572	$91.81	75	3.9	1	15.5%	15.02	4.60	$78.47	75	14.2	1	15.5%	12.36	3.40
3601594	$37.22	105	7.1	2	46.6%	25.81	23.50	$24.86	85	14.4	2	46.6%	15.01	49.60
3601682	$44.28	75	3.7	1	44.7%	14.95	12.00	$38.87	75	13.8	1	44.7%	12.34	10.10
3601737	$136.00	75	4.0	1	9.1%	15.83	1.20	$114.46	75	14.6	1	9.1%	12.99	0.40
3602044	$30.48	105	7.5	4	44.5%	25.81	14.30	$16.77	95	19.4	4	44.5%	17.93	38.90
3602066	$26.25	105	7.5	11	45.5%	23.08	11.70	$14.12	95	19.8	11	45.5%	16.13	32.20
3602121	$59.67	75	3.8	1	28.2%	15.14	7.30	$51.60	75	14.1	1	28.2%	12.48	5.90
3602143	$32.18	85	5.0	1	48.2%	17.60	11.30	$25.43	75	13.9	1	48.2%	11.89	11.40
3602176	$45.51	85	4.8	1	45.3%	21.78	17.00	$36.95	75	13.3	1	45.3%	14.54	14.80
3602198	$29.06	105	7.3	1	47.4%	23.33	17.00	$21.21	75	13.5	1	47.4%	11.25	19.70
3602220	$30.56	105	7.2	1	47.2%	23.10	18.90	$22.81	75	13.3	1	47.2%	11.15	19.30
3602286	$39.31	75	3.8	1	45.0%	14.95	9.00	$34.46	75	14.1	1	45.0%	12.34	7.40
3602308	$37.08	85	5.0	1	40.5%	17.34	10.70	$30.16	75	14.0	1	40.5%	11.71	9.10
3602374	$30.56	105	7.3	2	45.9%	25.81	15.20	$18.54	85	15.9	2	45.9%	15.01	33.70
3602407	$29.43	105	7.3	1	48.0%	24.65	16.80	$21.09	75	13.4	1	48.0%	11.82	19.70
3602506	$29.59	105	7.5	2	44.1%	25.81	12.50	$15.95	95	19.5	2	44.1%	17.91	33.50
3602550	$77.70	75	4.0	1	16.6%	15.02	2.70	$66.08	75	14.6	1	16.6%	12.36	1.80
3602583	$45.11	75	3.9	1	39.3%	17.05	7.20	$37.97	75	14.2	1	39.3%	14.03	6.30
3602616	$29.43	105	7.5	1	44.1%	25.82	12.30	$17.32	75	13.7	1	44.1%	12.32	18.40
3602649	$32.80	105	7.2	3	44.2%	25.81	16.30	$20.15	95	18.0	3	44.2%	17.91	45.30
3602737	$41.16	75	3.8	1	44.4%	14.94	9.90	$34.75	75	13.9	1	44.4%	12.33	8.90
3602902	$35.48	105	7.2	1	43.9%	25.83	19.60	$26.80	75	13.0	1	43.9%	12.32	23.40
3603001	$33.57	105	7.4	1	47.8%	32.56	15.80	$21.74	75	13.6	1	47.8%	15.17	19.20
3603078	$22.26	105	7.6	17	47.2%	19.14	10.70	$11.89	95	20.0	17	47.2%	13.51	29.40
3603188	$60.44	75	3.9	1	19.5%	10.64	4.40	$52.03	75	14.3	1	19.5%	8.90	3.20
3603254	$75.17	75	3.6	1	27.7%	14.99	12.50	$65.41	75	13.4	1	27.7%	12.35	10.60
3603320	$39.18	105	7.0	1	45.6%	25.84	24.50	$29.64	75	12.5	1	45.6%	12.32	25.40
3603331	$43.65	75	3.8	1	42.0%	14.64	10.20	$38.14	75	14.0	1	42.0%	12.08	8.50
3603353	$28.92	105	7.4	1	46.5%	24.78	14.60	$17.78	85	16.3	1	46.5%	14.46	30.30
3603408	$29.37	105	7.5	6	44.6%	25.81	12.90	$15.60	95	19.7	6	44.6%	17.93	35.20
3604033	$33.99	95	6.2	1	43.6%	21.93	13.80	$26.40	75	13.8	1	43.6%	12.32	12.80
3604055	$31.00	105	7.4	1	45.8%	25.81	16.00	$19.46	75	12.9	1	45.8%	12.31	30.50
3604143	$27.16	105	7.6	10	45.0%	25.81	11.40	$13.83	95	20.2	10	45.0%	17.94	30.80
3604154	$27.10	105	7.6	3	44.9%	25.81	11.20	$13.68	95	20.3	3	44.9%	17.94	30.20
3604198	$27.77	105	7.5	3	46.6%	23.70	14.30	$15.81	95	19.4	3	46.6%	16.54	39.20
3604253	$27.37	105	7.5	2	44.8%	21.04	14.60	$16.14	95	19.3	2	44.8%	14.75	38.90
3604286	$32.86	105	7.3	2	44.1%	25.82	16.70	$20.03	95	18.8	2	44.1%	17.92	37.10

3604396	$30.86	105	7.4	2	43.7%	25.82	13.60	$17.17	95	18.9	2	43.7%	17.91	37.70
3604440	$62.81	75	3.9	1	22.3%	14.99	4.50	$54.45	75	14.4	1	22.3%	12.36	3.60
3604528	$82.85	75	4.0	1	15.3%	15.02	2.40	$70.42	75	14.6	1	15.3%	12.36	1.40
3604715	$26.38	105	7.6	10	47.7%	27.09	10.20	$12.80	95	20.1	10	47.7%	18.68	28.10
3604759	$27.51	105	7.4	2	47.3%	21.36	16.50	$17.35	95	18.7	2	47.3%	14.96	44.90
3604891	$27.29	105	7.6	1	44.8%	25.81	11.40	$17.89	75	14.3	1	44.8%	12.32	12.20
3604913	$31.40	105	7.4	4	44.9%	25.81	15.70	$18.05	95	18.8	4	44.9%	17.93	42.80
3604935	$29.45	105	7.5	11	44.8%	25.81	13.10	$15.83	95	19.6	11	44.8%	17.93	35.80
3605034	$27.03	105	7.6	4	44.2%	25.81	10.30	$13.46	95	20.1	4	44.2%	17.93	28.20
3605039	$29.53	105	7.5	3	45.0%	25.81	13.30	$16.08	95	19.4	3	45.0%	17.93	36.60
3605100	$30.18	105	7.5	7	43.5%	25.82	12.90	$16.14	95	19.6	7	43.5%	17.93	35.30
3605193	$31.10	105	7.4	1	44.2%	25.81	14.50	$18.95	75	13.1	1	44.2%	12.32	25.50
3605309	$32.54	105	7.3	1	44.1%	25.82	15.90	$21.11	85	16.0	1	44.1%	15.02	27.30
3605342	$29.35	105	7.5	1	43.8%	25.82	11.80	$16.22	75	13.5	1	43.8%	12.31	22.50
3605562	$45.87	75	3.7	1	42.4%	15.71	10.80	$32.60	75	13.8	1	40.9%	12.33	10.70
3605639	$32.23	75	4.0	1	44.7%	14.94	5.60	$26.41	75	14.6	1	44.7%	12.33	4.90
3605661	$27.18	95	6.5	1	43.9%	21.93	7.70	$19.95	75	14.6	1	43.9%	12.33	6.70
3605672	$43.22	85	4.9	1	38.9%	18.31	12.90	$36.12	75	13.6	1	38.9%	12.33	12.00
3605683	$171.96	75	4.0	1	7.2%	15.09	1.70	$30.94	75	13.0	1	44.4%	16.43	21.60
3605738	$27.38	105	7.6	7	44.9%	25.81	11.60	$14.00	95	20.1	7	44.9%	17.94	31.40
3605771	$31.58	105	7.4	1	45.2%	25.81	16.30	$19.74	75	13.1	1	45.2%	12.32	28.10
3605815	$39.47	75	3.8	1	47.3%	16.72	9.10	$32.65	75	14.1	1	47.3%	13.77	8.30
3605848	$58.04	75	3.9	1	24.7%	14.91	5.10	$50.68	75	14.3	1	24.7%	12.29	4.30
3606046	$43.14	75	3.8	1	46.8%	18.60	9.70	$35.79	75	14.0	1	46.8%	15.29	8.80
3606387	$27.64	105	7.6	9	44.9%	25.81	10.60	$13.53	95	20.1	9	44.9%	17.94	29.00
3606464	$34.67	105	7.0	3	46.5%	20.94	23.80	$24.45	95	16.5	3	46.5%	14.68	59.10
3606574	$28.71	105	7.2	1	47.5%	17.74	19.90	$22.96	95	19.6	1	47.5%	12.54	19.70
3606607	$27.72	105	7.5	27	46.7%	26.75	11.50	$13.81	95	20.0	27	46.7%	18.56	31.60
3606794	$30.17	105	7.4	1	46.0%	25.84	15.00	$21.99	75	13.8	1	46.0%	12.32	14.10
3606849	$26.73	105	7.5	1	46.9%	22.96	13.80	$17.28	75	13.8	1	46.9%	11.09	19.00
3606860	$32.75	105	7.3	3	44.0%	25.82	16.20	$19.84	95	18.3	3	44.0%	17.91	44.80
3606904	$64.75	75	3.3	1	43.9%	15.21	19.80	$59.73	75	12.6	1	43.9%	12.54	19.00
3606937	$90.66	75	3.8	1	15.8%	12.82	5.30	$77.58	75	14.1	1	15.8%	10.58	4.00
3606945	$32.15	85	5.1	1	42.6%	14.12	10.80	$26.60	75	14.1	1	42.6%	9.65	9.20
3606959	$85.68	75	4.0	1	14.6%	14.55	2.50	$72.95	75	14.5	1	14.6%	11.98	1.50
3607025	$103.70	75	3.8	1	15.8%	16.23	5.30	$88.48	75	14.1	1	15.8%	13.34	4.10
3607069	$30.07	105	7.4	2	45.2%	25.81	14.20	$16.71	95	19.2	2	45.2%	17.91	38.90
3607157	$32.64	105	7.3	4	44.8%	25.81	17.10	$20.03	95	18.3	4	44.8%	17.93	46.90
3607190	$30.82	85	5.1	1	47.3%	15.82	11.10	$25.39	75	14.0	1	47.3%	10.75	9.50
3607245	$32.49	105	7.4	1	42.5%	25.85	14.70	$23.62	75	13.8	1	42.5%	12.32	13.90
3607355	$30.10	105	7.4	1	47.3%	25.81	16.10	$20.89	75	13.5	1	47.3%	12.32	19.40
3608004	$47.62	75	3.8	1	34.9%	12.49	9.30	$42.82	75	13.9	1	34.9%	10.33	8.40
3608026	$27.76	105	7.5	24	44.9%	25.81	10.80	$13.78	95	19.9	24	44.9%	17.94	29.80
3608059	$32.84	105	7.3	2	46.2%	29.88	15.10	$18.55	95	18.9	2	46.2%	20.66	39.30
3608070	$30.23	95	6.3	1	44.0%	21.92	10.00	$20.83	75	14.2	1	44.0%	12.32	9.90
3608092	$28.72	105	7.5	1	44.7%	25.81	11.80	$16.03	75	13.5	1	44.7%	12.31	22.00
3608103	$39.42	105	7.1	3	44.3%	25.81	23.70	$25.61	95	16.9	3	44.3%	17.91	59.20
3608136	$42.44	105	6.8	3	46.5%	25.81	29.30	$30.07	95	15.6	3	46.5%	17.91	70.50
3608147	$28.88	105	7.5	1	46.1%	27.70	12.00	$18.61	75	14.0	1	46.1%	13.07	14.20
3608169	$169.21	75	3.9	1	9.1%	19.17	2.70	$141.83	75	14.4	1	9.1%	15.66	1.70
3608257	$30.33	105	7.5	24	46.6%	31.44	10.80	$14.80	95	19.9	24	46.6%	21.80	30.50
3608323	$30.88	105	7.4	1	44.8%	25.81	14.90	$18.54	85	16.4	1	44.8%	15.02	26.00
3608334	$28.90	105	7.5	1	44.2%	25.81	11.60	$15.85	75	13.5	1	44.2%	12.31	22.10
3608422	$28.65	95	6.2	1	46.4%	18.59	12.70	$21.74	75	13.8	1	46.4%	10.60	12.90
3608466	$37.84	105	7.4	2	47.1%	39.12	15.10	$19.11	95	19.1	2	47.1%	26.59	40.60
3608488	$32.01	95	6.2	1	43.2%	18.52	14.40	$25.54	75	13.8	1	43.2%	10.56	13.40
3608532	$29.21	105	7.5	2	43.9%	25.82	11.90	$15.21	85	16.7	2	43.9%	15.01	27.30

3609000	$36.57	105	7.1	1	45.3%	25.81	21.20	$24.03	85	14.9	1	45.3%	15.02	41.30
3610132	$33.52	105	7.2	1	44.8%	25.81	17.70	$21.78	85	15.4	1	44.8%	15.02	32.80
3610231	$35.03	75	3.9	1	45.9%	14.94	8.00	$28.80	75	14.2	1	45.9%	12.33	7.40
3610286	$47.57	75	4.0	1	29.3%	14.98	4.60	$41.20	75	14.5	1	29.3%	12.35	3.50
3610341	$31.54	105	7.4	1	43.5%	25.82	14.70	$21.72	75	13.8	1	43.5%	12.32	16.60
3611000	$23.36	105	7.6	133	47.6%	22.02	11.30	$12.33	95	20.3	133	47.6%	15.43	30.40
3611132	$78.10	75	3.9	1	17.9%	14.94	4.30	$67.38	75	14.3	1	17.9%	12.29	3.50
3611154	$108.05	75	4.0	1	11.2%	15.05	1.40	$91.74	75	14.6	1	11.2%	12.38	0.70
3611440	$74.90	75	3.8	1	21.1%	13.34	7.10	$66.62	75	13.9	1	21.1%	11.02	6.40
3611550	$273.35	75	4.0	1	4.5%	15.13	1.30	$227.35	75	14.5	1	4.5%	12.41	0.40
3611638	$43.31	105	6.9	1	44.8%	28.34	26.50	$32.01	75	12.3	1	44.8%	13.37	28.20
3611671	$38.45	105	7.0	1	46.1%	25.81	24.40	$28.28	85	15.6	1	46.1%	15.03	29.20
3611704	$31.60	105	7.4	1	47.0%	28.01	16.30	$20.94	75	13.4	1	47.0%	13.21	20.90
3611748	$90.30	75	3.9	1	15.1%	15.10	3.70	$77.05	75	14.3	1	15.1%	12.43	2.60
3611781	$37.63	105	7.0	4	45.7%	25.81	22.40	$24.91	95	16.7	4	45.7%	17.93	56.40
3611825	$34.27	105	7.3	1	43.1%	25.85	17.40	$25.32	75	13.5	1	43.1%	12.32	16.50
3611847	$30.81	105	7.3	1	46.6%	25.81	16.30	$20.60	75	13.1	1	46.6%	12.32	23.80
3611902	$35.88	85	5.1	1	45.0%	21.50	9.30	$27.30	75	14.2	1	45.0%	14.36	7.90
3611935	$46.48	75	3.7	1	38.8%	11.79	11.80	$42.23	75	13.6	1	38.8%	9.77	10.90
3612111	$30.74	105	7.4	1	45.6%	25.95	15.30	$19.63	75	13.3	1	45.6%	12.38	21.60
3612144	$25.17	105	7.5	7	46.9%	23.44	10.80	$13.33	95	19.9	7	46.9%	16.39	30.10
3612177	$50.85	75	3.9	1	29.5%	14.89	6.20	$44.09	75	14.2	1	29.5%	12.28	4.90
3612188	$33.36	105	7.3	2	45.8%	30.25	15.00	$18.28	95	18.8	2	45.8%	20.93	41.70
3612210	$43.79	75	3.9	1	34.6%	14.96	6.40	$38.49	75	14.3	1	34.6%	12.34	5.40
3612254	$31.54	105	7.4	1	47.0%	29.34	14.70	$20.02	75	13.6	1	47.0%	13.84	19.20
3612353	$38.09	85	5.0	1	39.5%	18.31	9.60	$31.40	75	14.0	1	39.5%	12.33	8.80
3612419	$27.72	105	7.6	2	45.0%	25.81	10.90	$13.63	95	20.0	2	45.0%	17.91	29.60
3612532	$31.58	105	7.3	4	44.6%	25.81	15.40	$18.85	95	18.5	4	44.6%	17.93	42.70
3612584	$28.45	105	7.3	1	48.3%	21.80	18.20	$20.27	85	16.4	1	48.3%	12.84	22.70
3612683	$27.63	105	7.5	2	46.7%	25.81	12.10	$14.74	85	16.6	2	46.7%	15.01	28.00
3612749	$47.13	75	3.8	1	39.1%	16.85	8.30	$41.71	75	14.1	1	39.1%	13.86	7.40
3612771	$32.93	85	5.0	1	48.3%	17.80	12.00	$26.74	75	13.9	1	48.3%	12.01	10.50
3612870	$29.49	95	6.3	1	44.1%	19.46	11.50	$22.47	75	14.0	1	44.1%	11.04	11.00
3612881	$90.77	75	4.0	1	13.6%	15.03	1.80	$77.56	75	14.6	1	13.6%	12.37	1.00
3612958	$64.84	75	3.9	1	24.5%	18.19	4.70	$56.16	75	14.4	1	24.5%	14.93	3.80
3613002	$29.82	105	7.4	2	44.0%	25.08	13.30	$16.92	95	19.4	2	44.0%	17.42	33.70
3613024	$29.16	85	5.1	1	47.4%	13.75	11.40	$24.32	75	14.0	1	47.4%	9.41	9.70
3613068	$53.73	75	3.9	1	24.6%	10.11	6.40	$43.94	75	14.2	1	24.6%	8.39	5.00
3613079	$26.12	105	7.3	1	47.1%	18.16	17.10	$18.03	95	19.1	1	47.1%	12.83	33.90
3613145	$24.02	105	7.5	1	47.8%	21.14	11.90	$14.25	75	13.5	1	47.8%	10.30	22.80
3613233	$27.30	105	7.6	2	44.9%	25.81	11.60	$14.27	85	17.1	2	44.9%	15.01	26.30
3613288	$29.62	95	6.2	1	48.0%	21.07	12.80	$22.86	75	13.9	1	48.0%	11.89	12.10
3613376	$29.27	105	7.5	15	45.3%	25.81	13.20	$15.92	95	19.5	15	45.3%	17.93	36.50
3613420	$31.47	105	7.3	4	45.6%	25.81	16.40	$18.92	95	18.6	4	45.6%	17.93	45.00
3613442	$28.58	105	7.5	3	44.6%	25.81	11.60	$14.95	95	19.7	3	44.6%	17.93	32.10
3613530	$64.14	75	3.8	1	27.8%	15.65	8.40	$55.45	75	14.0	1	27.8%	12.89	6.90
3613552	$28.53	105	7.5	14	44.9%	25.81	11.90	$14.93	95	19.8	14	44.9%	17.93	32.70
3613585	$37.43	95	6.1	1	46.3%	26.76	15.70	$27.89	75	13.5	1	46.3%	14.71	15.20
3613618	$55.41	75	3.8	1	30.3%	14.98	7.50	$47.97	75	14.1	1	30.3%	12.35	6.10
3613662	$32.66	95	6.2	1	46.1%	24.56	11.70	$23.50	75	13.9	1	46.1%	13.68	11.80
3613739	$36.79	85	4.9	1	45.5%	18.30	12.90	$28.37	75	13.6	1	45.5%	12.33	12.30
3613805	$35.03	85	5.1	1	43.0%	18.30	9.70	$28.29	75	14.1	1	43.0%	12.33	8.20
3613981	$42.49	75	3.9	1	35.7%	14.97	6.40	$37.33	75	14.3	1	35.7%	12.35	5.40
3614003	$29.49	105	7.5	1	44.8%	25.81	13.00	$18.04	75	13.7	1	44.8%	12.32	18.50
3614036	$47.02	75	3.8	1	36.0%	14.97	7.80	$41.72	75	14.1	1	36.0%	12.35	6.90
3614058	$27.54	105	7.5	1	48.2%	25.37	14.10	$19.19	75	14.0	1	48.2%	12.13	14.20
3614102	$59.54	75	3.7	1	31.8%	14.97	10.30	$51.66	75	13.7	1	31.8%	12.35	8.60

3615000	$23.37	105	7.6	43	47.5%	19.86	12.00	$13.11	95	19.9	43	47.5%	14.00	32.80
3615121	$29.15	105	7.4	1	46.7%	25.51	14.50	$17.22	75	13.2	1	46.7%	12.18	27.50
3615187	$75.25	75	3.8	1	21.3%	15.16	6.00	$64.76	75	14.1	1	21.3%	12.49	4.70
3615242	$54.31	75	3.9	1	28.5%	16.38	5.70	$46.78	75	14.3	1	28.5%	13.48	4.40
3615297	$31.90	105	7.4	2	44.1%	25.82	15.50	$19.25	85	15.9	2	44.1%	15.01	34.50
3615363	$40.00	95	6.0	1	40.5%	21.95	16.20	$31.61	75	13.2	1	40.5%	12.33	15.50
3615400	$34.01	105	7.2	3	44.6%	25.81	18.70	$21.47	95	18.0	3	44.6%	17.92	51.10
3615561	$28.84	105	7.4	2	46.0%	24.23	14.70	$16.49	95	19.1	2	46.0%	16.88	40.10
3615638	$34.62	105	7.3	1	46.9%	33.27	15.40	$22.88	75	13.7	1	46.9%	15.47	15.90
3615814	$26.32	105	7.4	1	47.4%	20.15	15.70	$18.14	85	16.2	1	47.4%	11.94	26.30
3615836	$25.28	105	7.4	1	47.1%	20.24	13.90	$16.44	75	13.3	1	47.1%	9.91	21.50
3615902	$34.84	95	6.2	1	44.6%	24.12	13.50	$26.77	75	13.8	1	44.6%	13.45	12.60
3615946	$39.18	105	7.2	2	46.9%	38.18	17.00	$21.54	85	15.5	2	46.9%	21.77	39.90
3616050	$39.56	85	4.9	1	44.0%	18.30	14.20	$31.25	75	13.6	1	44.0%	12.33	13.00
3616089	$30.15	105	7.4	1	46.4%	25.81	15.30	$19.31	75	13.4	1	46.4%	12.32	21.60
3616111	$67.46	75	3.9	1	23.3%	17.52	4.90	$58.45	75	14.3	1	23.3%	14.39	4.10
3616188	$43.47	75	3.8	1	45.1%	16.44	10.60	$38.09	75	14.0	1	45.1%	13.54	8.90
3616375	$27.02	105	7.4	1	46.7%	21.38	15.30	$19.62	75	13.7	1	46.7%	10.41	16.10
3616419	$30.84	105	7.5	1	45.7%	29.88	11.90	$18.81	75	13.9	1	45.7%	14.08	15.00
3616452	$56.32	85	4.7	1	35.9%	18.33	17.20	$48.99	95	19.6	1	44.7%	17.98	13.00
3616573	$33.94	105	7.2	1	46.7%	26.43	20.20	$24.25	75	13.1	1	46.7%	12.58	21.80
3616628	$28.75	105	7.5	2	46.3%	27.86	11.50	$14.89	95	19.5	2	46.3%	19.20	32.10
3616727	$38.47	75	3.8	1	47.5%	13.55	11.10	$32.51	75	13.9	1	47.5%	11.21	10.10
3616749	$27.29	105	7.5	7	44.4%	22.24	13.10	$15.21	95	19.7	7	44.4%	15.57	35.80
3616815	$63.29	75	4.0	1	20.2%	15.00	2.50	$53.94	75	14.6	1	20.2%	12.36	1.50
3616936	$30.82	105	7.5	1	43.2%	25.83	13.40	$21.09	75	13.9	1	43.2%	12.32	13.50
3616958	$30.38	105	7.4	3	44.8%	25.81	14.00	$17.07	95	19.0	3	44.8%	17.92	38.90
3617332	$27.23	105	7.5	6	44.5%	24.38	10.90	$14.27	95	19.8	6	44.5%	16.99	30.40
3617530	$28.64	105	7.5	22	45.0%	25.81	11.90	$15.14	95	19.5	22	45.0%	17.93	32.90
3617620	$115.47	75	3.9	1	11.8%	12.71	4.20	$94.57	75	14.2	1	11.8%	10.49	3.60
3617622	$27.42	105	7.4	2	46.4%	21.15	15.70	$17.24	95	18.7	2	46.4%	14.82	43.20
3617739	$29.12	105	7.5	5	43.7%	25.82	11.40	$15.20	95	19.6	5	43.7%	17.93	31.60
3617882	$70.63	75	3.9	1	19.9%	15.00	4.40	$61.43	75	14.3	1	19.9%	12.36	3.60
3617893	$38.75	95	5.9	1	46.6%	23.96	19.30	$30.38	75	13.2	1	46.6%	13.38	18.70
3618036	$52.35	75	3.9	1	28.9%	14.81	6.40	$45.27	75	14.2	1	28.9%	12.22	5.00
3618047	$29.06	105	7.5	1	48.1%	29.02	12.60	$16.10	75	13.3	1	48.1%	13.59	24.10
3618124	$45.71	105	6.7	1	45.5%	25.81	30.40	$33.48	85	14.2	1	45.5%	15.02	42.00
3618135	$43.01	75	3.9	1	37.7%	14.96	6.70	$36.04	75	14.2	1	37.7%	12.34	5.70
3618146	$27.69	105	7.6	10	44.4%	25.81	11.60	$14.17	95	20.1	10	44.4%	17.93	31.50
3618157	$30.52	105	7.4	16	45.3%	25.81	15.00	$17.32	95	19.0	16	45.3%	17.93	41.10
3618201	$42.83	75	3.9	1	35.1%	14.27	6.80	$37.92	75	14.2	1	35.1%	11.78	5.90
3618212	$29.89	105	7.4	1	45.0%	25.81	13.80	$18.16	75	13.5	1	45.0%	12.32	22.90
3618256	$24.70	105	7.6	8	46.3%	22.36	10.70	$12.75	95	20.0	8	46.3%	15.66	29.60
3618333	$31.98	105	7.4	1	44.2%	25.81	15.70	$19.43	85	16.0	1	44.2%	15.02	30.50
3618388	$22.76	105	7.6	10	47.8%	22.12	10.10	$11.84	95	20.2	10	47.8%	15.51	27.80
3618443	$35.84	105	7.0	1	48.2%	23.48	24.60	$28.32	75	12.6	1	48.2%	11.31	24.20
3618542	$27.86	105	7.4	1	44.7%	22.13	13.70	$17.70	85	16.4	1	44.7%	13.02	22.90
3618597	$75.99	75	3.9	1	19.1%	15.01	5.00	$65.85	75	14.2	1	19.1%	12.36	4.20
3618718	$30.98	105	7.4	1	44.1%	24.10	16.00	$19.44	75	13.2	1	44.1%	11.59	25.00
3618762	$51.31	75	3.4	1	48.3%	13.06	18.30	$43.47	75	13.0	1	48.3%	10.80	16.10
3619070	$42.38	75	3.9	1	34.1%	14.97	5.30	$37.04	75	14.4	1	34.1%	12.35	4.30
3619092	$32.72	105	7.3	1	44.4%	25.81	16.60	$22.35	75	12.9	1	44.4%	12.32	23.70
3619213	$33.05	105	7.3	3	43.5%	25.82	16.50	$19.78	95	18.6	3	43.5%	17.93	45.10
3619229	$29.14	105	7.5	1	44.0%	25.82	11.80	$16.52	75	13.6	1	44.0%	12.32	21.00
3619290	$39.97	85	5.0	1	38.8%	18.31	10.90	$32.27	75	14.0	1	38.8%	12.33	9.20
3619308	$44.90	75	3.7	1	42.4%	14.19	11.60	$39.36	75	13.8	1	42.4%	11.72	9.80
3619356	$32.75	95	6.1	1	48.0%	22.42	15.40	$24.56	75	13.6	1	48.0%	12.59	15.80

3619408	$31.48	105	7.3	1	45.6%	25.81	16.10	$20.27	75	12.7	1	45.6%	12.31	30.30
3619466	$36.36	105	7.1	3	46.0%	25.81	21.50	$23.85	95	17.3	3	46.0%	17.93	57.80
3619510	$86.12	75	3.9	1	15.0%	14.19	3.40	$73.53	75	14.4	1	15.0%	11.69	2.30
3619587	$70.93	75	3.9	1	19.8%	14.77	4.60	$61.81	75	14.3	1	19.8%	12.17	3.80
3619642	$29.57	95	6.2	1	47.9%	21.92	11.80	$21.80	75	13.9	1	47.9%	12.32	11.80
3619664	$28.10	105	7.4	3	46.0%	24.51	13.30	$15.65	95	19.3	3	46.0%	17.06	36.80
3619774	$87.57	75	3.7	1	20.0%	15.34	7.60	$77.52	75	13.8	1	20.0%	12.62	6.90
3619972	$28.98	105	7.5	13	44.8%	25.81	12.50	$15.22	95	19.8	13	44.8%	17.93	34.00
3619994	$55.94	75	3.9	1	25.4%	14.99	4.90	$48.00	75	14.4	1	25.4%	12.35	3.70
3620082	$68.16	75	3.9	1	20.0%	15.08	3.70	$59.03	75	14.4	1	20.0%	12.43	2.90
3620115	$38.06	75	3.9	1	48.0%	16.34	8.90	$31.72	75	14.1	1	48.0%	13.46	8.10
3620126	$32.05	105	7.4	1	47.9%	31.65	14.10	$18.71	75	13.2	1	47.9%	14.78	24.30
3620302	$103.52	75	3.3	1	25.2%	15.00	16.40	$92.75	85	15.9	1	25.2%	15.08	12.10
3620313	$23.44	105	7.5	9	47.5%	19.68	12.30	$13.39	95	19.8	9	47.5%	13.87	33.80
3620346	$33.62	105	7.3	1	45.7%	27.39	18.40	$24.44	75	13.5	1	45.7%	12.93	18.00
3620379	$228.94	75	4.0	1	5.4%	15.12	1.70	$191.10	75	14.5	1	5.4%	12.40	0.80
3620390	$80.85	75	4.0	1	16.1%	14.55	3.20	$68.44	75	14.4	1	16.1%	11.98	2.10
3620500	$37.86	75	3.9	1	46.1%	14.94	8.80	$31.34	75	14.1	1	46.1%	12.33	8.00
3620687	$30.14	105	7.4	17	45.0%	25.81	13.80	$16.90	95	18.9	17	45.0%	17.93	38.40
3620698	$29.54	105	7.5	4	43.8%	25.82	12.30	$15.46	95	19.7	4	43.8%	17.93	33.40
3620731	$28.74	105	7.4	1	46.7%	23.44	15.90	$19.04	75	13.4	1	46.7%	11.30	22.30
3620841	$42.18	75	3.8	1	44.3%	14.94	10.50	$35.72	75	13.9	1	44.3%	12.33	9.40
3620852	$45.94	85	4.8	1	39.8%	20.59	13.60	$38.12	75	13.5	1	39.8%	13.78	12.80
3620896	$84.92	75	4.0	1	14.0%	12.88	3.00	$73.57	75	14.5	1	14.0%	10.63	2.20
3620951	$30.16	105	7.3	1	47.5%	23.47	18.30	$21.97	75	13.3	1	47.5%	11.31	19.60
3620989	$64.89	75	3.7	1	27.4%	14.82	8.80	$56.13	75	13.9	1	27.4%	12.22	7.20
3620995	$112.47	75	3.7	1	15.0%	14.79	7.10	$96.41	75	13.8	1	15.0%	12.17	5.70
3621050	$27.31	95	6.2	1	42.7%	12.2	14.2	$23.06	75	13.8	1	42.7%	7.27	13.20
3621105	$24.18	105	7.5	8	47.3%	20.15	12.8	$13.89	95	19.7	8	47.3%	14.18	35.20
3621226	$57.44	75	3.8	1	32.5%	18.16	7.6	$49.68	75	14.1	1	32.5%	14.92	6.20
3621523	$29.36	85	5.1	1	43.4%	16.55	7.7	$23.47	75	14.3	1	43.4%	11.21	6.30
3621589	$24.59	105	7.5	3	47.6%	18.72	15	$15.10	95	19.2	3	47.6%	13.21	40.90
3621600	$47.89	75	3.9	1	29.3%	14.13	5.3	$41.41	75	14.3	1	29.3%	11.67	4.00
3621809	$28.32	105	7.6	9	44.2%	25.81	11	$13.91	95	20.1	9	44.2%	17.93	29.90
3621985	$36.59	105	7.2	2	44.7%	25.81	20.7	$23.63	95	17.5	2	44.7%	17.91	55.80
3622065	$49.99	105	6.6	1	44.6%	25.86	33.7	$40.25	85	14.9	1	44.6%	15.04	30.10
3622084	$30.43	105	7.3	3	44.7%	22.84	16.8	$19.04	95	18.4	3	44.7%	15.95	45.80
3622106	$27.73	105	7.4	2	44.7%	22.48	13.4	$15.91	95	19.2	2	44.7%	15.71	37.20
3622183	$37.05	105	7.1	2	46.4%	25.81	23.1	$24.77	95	17.2	2	46.4%	17.91	61.00
3622200	$31.95	105	7.3	3	46.3%	25.81	17.6	$19.76	95	18.2	3	46.3%	17.93	48.00
3622260	$29.41	105	7.4	4	45.1%	25.81	13.1	$16.04	95	19.3	4	45.1%	17.93	36.10
3622315	$29.58	105	7.5	7	44.7%	25.81	13.1	$16.00	95	19.5	7	44.7%	17.93	36.00
3622326	$25.62	105	7.4	1	47.2%	19.53	15.3	$18.84	75	13.6	1	47.2%	9.59	18.10
3622370	$71.94	75	3.9	1	21.7%	15	5.5	$59.77	75	14.2	1	21.7%	12.36	4.70
3622447	$32.93	105	7.3	1	45.8%	25.81	18.6	$22.81	75	12.9	1	45.8%	12.32	26.40
3622480	$26.78	105	7.6	11	44.7%	25.81	10.4	$13.37	95	20.1	11	44.7%	17.93	28.30
3622502	$28.23	105	7.6	16	45.0%	25.81	11.7	$14.08	95	20.1	16	45.0%	17.94	31.60
3622546	$33.99	105	7.2	2	45.6%	25.81	19.6	$21.86	95	17.7	2	45.6%	17.91	53.40
3622557	$57.45	75	3.5	1	38.3%	14.97	14.3	$52.06	75	13.3	1	38.3%	12.35	13.40
3622612	$27.75	105	7.5	13	45.0%	25.81	10.8	$14.13	95	19.9	13	45.0%	17.94	29.70
3622623	$28.75	105	7.5	1	45.0%	25.81	12.1	$16.02	75	13.5	1	45.0%	12.31	22.90
3622733	$30.99	105	7.4	10	45.1%	25.81	15.4	$17.76	95	18.9	10	45.1%	17.93	42.20
3622810	$48.38	105	6.6	1	45.9%	25.84	33.7	$38.98	95	17.9	1	45.9%	17.95	33.00
3622832	$33.28	105	7.2	4	46.2%	25.81	19.2	$21.28	95	17.8	4	46.2%	17.93	52.30
3622843	$53.00	75	3.9	1	25.0%	13.09	5	$45.70	75	14.4	1	25.0%	10.82	3.80
3622865	$32.38	105	7.5	2	46.5%	31.66	13.9	$16.61	95	19.9	2	46.5%	21.93	38.30
3622876	$27.75	105	7.6	3	44.8%	25.81	12.2	$14.26	95	20.2	3	44.8%	17.93	32.60

3622980	$32.83	105	7.2	3	45.5%	25.81	17.9	$20.50	95	18.1	3	45.5%	17.92	49.10
3623052	$28.29	105	7.5	2	45.7%	26.58	11.3	$14.66	85	16.6	2	45.7%	15.43	26.40
3623217	$27.65	105	7.6	1	44.9%	25.81	10.6	$15.82	75	14.0	1	44.9%	12.32	16.80
3623404	$30.17	105	7.3	2	47.2%	24.64	17	$18.72	95	18.8	2	47.2%	17.15	37.60
3623602	$52.28	75	3.6	1	40.1%	15.12	12.8	$47.31	75	13.5	1	40.1%	12.46	12.00
3623701	$22.27	105	7.6	10	47.8%	21.9	9.6	$11.42	95	20.3	10	47.8%	15.36	26.30
3623745	$54.97	75	3.9	1	29.3%	17.5	5.8	$47.26	75	14.3	1	29.3%	14.38	4.50
3623789	$38.96	85	5.0	1	40.0%	18.83	10.2	$32.01	75	13.9	1	40.0%	12.67	9.30
3623822	$40.13	85	4.8	1	45.8%	18.3	15.7	$31.86	75	13.3	1	45.8%	12.33	14.60
3623965	$28.25	105	7.3	2	48.0%	21.68	17.7	$18.31	95	18.8	2	48.0%	15.19	38.10
3624020	$35.90	75	3.9	1	48.2%	14.4	9.1	$29.23	75	14.1	1	48.2%	11.90	8.70
3624075	$99.06	75	3.9	1	13.6%	15.03	3.4	$85.90	75	14.3	1	13.6%	12.37	2.70
3624141	$27.25	105	7.2	1	47.3%	17.77	19.1	$19.39	85	15.4	1	47.3%	10.64	36.20
3624229	$23.69	105	7.5	16	46.0%	19.5	11.6	$13.29	95	19.8	16	46.0%	13.74	31.90
3624251	$25.74	105	7.5	2	46.2%	20.25	14.3	$15.58	95	19.7	2	46.2%	14.23	32.10
3624273	$26.62	105	7.6	13	44.8%	25.81	10.5	$13.10	95	20.5	13	44.8%	17.94	28.10
3624295	$30.07	105	7.5	2	44.1%	25.82	13.2	$16.78	85	16.6	2	44.1%	15.01	28.10
3624405	$28.80	105	7.5	7	45.0%	25.81	12.1	$15.29	95	19.5	7	45.0%	17.93	33.40
3624515	$29.27	105	7.6	6	46.4%	27.09	13.8	$15.72	95	19.7	6	46.4%	18.67	37.50
3624526	$29.56	105	7.5	6	47.2%	27.39	14.4	$16.22	95	19.4	6	47.2%	18.90	39.40
3624625	$134.85	75	3.8	1	10.3%	13.03	4.4	$118.02	75	14.1	1	10.3%	10.74	3.80
3624713	$59.37	75	3.9	1	24.8%	15.15	5.6	$50.91	75	14.3	1	24.8%	12.49	4.30
3624823	$47.14	75	3.9	1	32.1%	14.97	6.3	$41.55	75	14.3	1	32.1%	12.35	5.40
3624867	$59.78	75	4.0	1	21.0%	13.81	3.2	$51.31	75	14.5	1	21.0%	11.40	2.20
3624988	$49.30	95	5.8	1	41.5%	28.13	19.4	$38.47	75	13.0	1	46.9%	15.48	18.60
3625043	$29.52	105	7.5	6	46.6%	29.02	12.2	$15.21	95	19.7	6	46.6%	19.94	33.70
3625076	$31.08	105	7.4	3	46.4%	31	11.9	$15.46	95	19.9	3	46.4%	21.66	33.30
3625109	$31.16	105	7.4	3	44.2%	25.81	14.5	$17.72	95	18.8	3	44.2%	17.91	40.20
3625120	$28.86	105	7.5	1	43.9%	25.82	11.3	$19.26	75	14.1	1	43.9%	12.32	12.20
3625164	$25.90	105	7.5	1	47.7%	23.2	12.8	$15.37	75	13.5	1	47.7%	11.20	23.50
3625384	$26.83	105	7.6	3	44.8%	25.81	10.6	$13.48	95	20.2	3	44.8%	17.94	28.90
3625417	$29.19	105	7.5	7	45.5%	25.81	13.3	$15.84	95	19.5	7	45.5%	17.94	36.50
3625428	$92.80	75	3.9	1	13.7%	13.07	4	$80.60	75	14.3	1	13.7%	10.78	3.30
3625527	$26.81	105	7.5	3	46.4%	24.64	11.7	$14.26	95	19.7	3	46.4%	17.15	32.40
3625571	$62.01	75	3.9	1	22.1%	15	4	$53.59	75	14.4	1	22.1%	12.36	3.10
3625747	$52.77	75	3.9	1	27.9%	15.65	5.2	$45.61	75	14.4	1	27.9%	12.89	4.00
3625857	$32.73	105	7.3	2	43.8%	25.82	16.3	$19.62	95	18.5	2	43.8%	17.91	44.70
3625923	$51.70	95	5.5	1	45.7%	21.94	29.9	$41.84	75	12.0	1	45.7%	12.33	29.50
3625934	$107.08	75	4.0	1	11.7%	15.05	2	$91.34	75	14.6	1	11.7%	12.38	1.30
3625967	$30.98	105	7.4	1	43.8%	25.84	14.2	$21.84	75	13.9	1	43.8%	12.32	13.60
3626121	$32.30	105	7.3	3	45.9%	25.81	17.5	$20.17	95	18.1	3	45.9%	17.91	48.20
3626209	$53.95	75	3.8	1	32.2%	15.38	7.9	$47.01	75	14.0	1	32.2%	12.67	6.50
3626264	$26.78	105	7.6	6	44.9%	25.81	10.9	$13.23	95	20.5	6	44.9%	17.94	28.90
3626319	$32.31	105	7.3	1	44.1%	25.82	16.1	$20.73	75	12.9	1	44.1%	12.32	29.20
3626352	$29.00	105	7.5	2	44.9%	25.81	12.4	$15.51	95	19.5	2	44.9%	17.91	34.20
3626462	$43.76	75	3.9	1	33.4%	14.06	6.4	$38.69	75	14.3	1	33.4%	11.60	5.50
3626561	$52.84	75	4.0	1	22.2%	11.43	4.1	$45.47	75	14.5	1	22.2%	9.47	2.90
3626649	$38.76	75	3.9	1	39.3%	12.53	7.4	$32.84	75	14.2	1	39.3%	10.38	6.50
3626704	$66.66	75	3.9	1	20.6%	15	4	$57.85	75	14.4	1	20.6%	12.36	3.20
3626752	$63.17	95	5.1	1	45.3%	21.96	35.4	$53.21	75	10.8	1	45.3%	12.33	34.90
3626759	$49.02	105	6.5	3	46.2%	25.81	33.8	$39.28	95	14.0	3	46.2%	17.91	84.80
3626770	$29.54	105	7.5	2	44.0%	25.82	12.4	$15.75	85	16.5	2	44.0%	15.01	28.80
3626880	$45.20	75	3.8	1	35.7%	13.71	7.6	$40.23	75	14.1	1	35.7%	11.33	6.70
3626902	$52.23	75	3.6	1	42.0%	14.96	14.6	$45.81	75	13.5	1	42.0%	12.34	12.50
3626924	$31.74	105	7.3	1	45.1%	25.81	16.3	$21.11	75	13.4	1	45.1%	12.32	21.60
3626946	$31.13	105	7.4	6	44.7%	25.81	14.9	$18.36	95	18.7	6	44.7%	17.93	41.30
3627133	$150.83	75	3.9	1	8.9%	16.02	2.5	$126.97	75	14.4	1	8.9%	13.14	1.50

3627188	$30.56	105	7.5	1	45.4%	26.94	14.5	$19.32	75	13.7	1	45.4%	12.71	19.40
3627221	$70.11	75	4.0	1	21.5%	18.93	2.8	$59.41	75	14.6	1	21.5%	15.52	1.80
3627309	$26.72	105	7.6	13	44.9%	25.81	10.8	$13.24	95	20.5	13	44.9%	17.94	28.80
3627331	$26.53	105	7.5	1	48.6%	23.98	13.8	$18.92	75	13.9	1	48.6%	11.53	13.70
3627419	$24.78	105	7.5	4	47.4%	19.32	14.7	$15.00	95	19.3	4	47.4%	13.63	40.00
3627452	$64.54	75	3.8	1	26.4%	14.99	7.7	$55.71	75	14.0	1	26.4%	12.35	6.20
3627485	$27.50	105	7.6	15	44.8%	25.81	11.7	$14.03	95	20.1	15	44.8%	17.94	31.40
3627529	$51.17	75	3.8	1	30.5%	12.78	7.5	$44.51	75	14.1	1	30.5%	10.57	6.10
3627672	$30.12	105	7.2	1	47.8%	21.93	19.9	$23.20	75	13.2	1	47.8%	10.64	19.70
3627694	$40.90	95	5.8	1	43.4%	17.74	21.9	$34.53	75	12.6	1	43.4%	10.14	21.20
3627815	$27.10	105	7.5	7	47.3%	25.36	12.3	$14.52	95	19.6	7	47.3%	17.65	33.90
3627859	$44.49	75	3.9	1	36.1%	14.12	7.2	$37.42	75	14.2	1	36.1%	11.66	6.20
3627969	$88.89	75	4.0	1	13.9%	14.56	2.2	$76.25	75	14.5	1	13.9%	11.99	1.40
3628035	$28.91	105	7.5	2	46.1%	28.5	11.1	$14.07	95	19.9	2	46.1%	19.67	30.50
3628101	$163.30	75	4.0	1	6.6%	12.87	1.1	$136.13	75	14.6	1	6.6%	10.60	0.20
3628145	$33.79	105	7.2	2	46.7%	24.23	20.3	$21.55	95	17.8	2	46.7%	16.88	47.40
3628178	$29.62	105	7.5	10	44.9%	25.81	13.5	$16.09	95	19.5	10	44.9%	17.93	37.00
3628189	$26.02	105	7.6	4	44.8%	25.81	9.4	$12.56	95	20.4	4	44.8%	17.94	25.50
3628200	$26.47	105	7.6	1	45.0%	25.81	10.5	$14.13	75	14.1	1	45.0%	12.31	19.40
3628244	$43.79	85	4.8	1	44.2%	18.51	17.7	$35.80	75	13.3	1	44.2%	12.46	15.70
3628310	$32.56	105	7.3	3	44.6%	25.81	16.7	$19.75	95	18.4	3	44.6%	17.91	45.80
3628431	$39.29	85	4.8	1	43.5%	13.14	17.8	$33.17	75	13.2	1	43.5%	9.02	15.50
3628453	$31.66	105	7.5	3	46.9%	33.27	11.4	$15.33	95	19.8	3	46.9%	22.95	31.80
3628618	$29.20	105	7.4	2	46.6%	25.07	14.9	$17.12	85	16.1	2	46.6%	14.60	34.40
3628640	$23.54	105	7.5	5	46.5%	15.95	15.2	$15.01	95	19.2	2	46.5%	11.35	41.30
3628761	$43.54	85	4.8	1	43.9%	18.3	17.2	$35.30	75	13.3	1	43.9%	12.33	15.40
3628860	$43.10	75	3.8	1	42.8%	14.95	9.9	$37.59	75	13.9	1	42.8%	12.34	8.20
3628959	$72.92	75	3.9	1	22.2%	16.03	5.6	$60.56	75	14.2	1	22.2%	13.19	4.80
3628990	$120.72	75	3.7	1	13.9%	15.04	6.7	$106.31	75	13.8	1	13.9%	12.37	6.10
3629014	$31.85	105	7.4	1	44.0%	26.6	14.7	$21.06	75	13.6	1	44.0%	12.65	18.50
3629058	$119.91	75	3.9	1	11.2%	15.13	3.2	$103.01	75	14.3	1	11.2%	12.44	2.50
3629113	$28.19	105	7.5	14	44.5%	25.81	11.1	$13.98	95	19.9	14	44.5%	17.93	30.30
3629245	$28.55	105	7.5	2	44.5%	25.81	11.5	$14.73	95	19.8	2	44.5%	17.91	31.40
3629322	$63.41	75	3.9	1	22.1%	15	4.5	$55.18	75	14.4	1	22.1%	12.36	3.70
3629333	$25.90	105	7.6	12	44.6%	25.81	8.9	$12.42	95	20.3	12	44.6%	17.93	24.30
3629338	$30.87	105	7.4	6	44.6%	25.81	14.5	$17.50	95	18.8	6	44.6%	17.93	40.00
3629421	$27.92	105	7.5	2	44.6%	25.81	10.7	$14.14	85	16.9	2	44.6%	15.01	24.70
3629443	$24.65	105	7.6	9	46.5%	22.24	11	$12.79	95	20.0	9	46.5%	15.58	30.30
3629476	$34.53	105	7.2	1	44.0%	25.84	18.5	$24.68	75	13.2	1	44.0%	12.32	19.30
3629509	$30.31	105	7.4	1	45.5%	25.81	14.8	$18.16	85	16.3	1	45.5%	15.02	28.40
3629520	$54.71	75	3.8	1	29.1%	11.56	8.9	$47.68	75	13.9	1	29.1%	9.58	7.30
3629542	$33.67	105	7.2	2	44.4%	25.81	17.9	$21.06	95	18.1	2	44.4%	17.91	48.10
3629597	$28.29	105	7.5	2	45.8%	25.81	12.2	$14.98	95	19.6	2	45.8%	17.91	33.50
3629630	$30.50	105	7.4	1	46.3%	24.92	16.6	$20.00	75	13.1	1	46.3%	11.93	25.40
3629872	$77.53	75	4.0	1	16.6%	15.02	2.6	$66.19	75	14.6	1	16.6%	12.36	1.80
3629894	$30.10	105	7.4	2	47.7%	28.5	14.3	$16.51	95	19.2	2	47.7%	19.67	39.60
3630026	$30.11	105	7.4	1	44.1%	25.82	13.2	$18.07	75	13.5	1	44.1%	12.32	22.10
3630136	$47.39	85	4.7	1	41.6%	18.31	16.3	$38.71	75	13.1	1	41.6%	12.33	15.50
3630169	$26.42	105	7.6	5	44.5%	25.81	9.8	$12.84	95	20.4	5	44.5%	17.94	26.50
3630191	$28.82	105	7.5	1	44.4%	25.81	11.8	$15.90	75	13.7	1	44.4%	12.31	21.90
3630202	$29.66	85	5.2	1	43.0%	18.3	6.3	$23.28	75	14.5	1	43.0%	12.33	5.00
3630213	$26.57	105	7.6	1	44.8%	25.81	10.5	$14.32	75	14.3	1	44.8%	12.32	16.40
3630235	$41.94	95	5.9	1	44.7%	21.93	21	$33.22	75	12.9	1	44.7%	12.33	21.10
3630279	$33.47	105	7.5	8	46.8%	34.51	12.8	$16.55	95	19.6	8	46.8%	23.73	35.60
3630411	$37.02	105	7.3	1	44.9%	33.77	16	$25.71	75	13.6	1	44.9%	15.67	15.10
3630521	$31.18	105	7.5	1	41.7%	22.4	15.9	$23.28	75	13.9	1	41.7%	10.84	14.80
3630543	$27.98	105	7.5	8	45.0%	25.81	11	$14.36	95	19.8	8	45.0%	17.93	30.40

3630576	$28.75	105	7.5	1	45.6%	25.81	12.9	$17.19	75	13.8	1	45.6%	12.32	18.70
3630581	$32.81	105	7.3	2	45.7%	25.81	18.2	$20.94	95	18.5	2	45.7%	17.92	40.30
3630598	$41.01	75	3.9	1	35.2%	14.97	5.2	$35.97	75	14.4	1	35.2%	12.35	4.30
3630609	$39.65	85	4.9	1	45.7%	20.83	13.4	$32.11	75	13.7	1	45.7%	13.93	11.60
3630642	$30.72	105	7.4	3	44.3%	25.81	14.1	$17.17	95	19.0	3	44.3%	17.93	38.80
3630675	$31.44	105	7.4	1	44.0%	25.84	15	$22.61	75	13.8	1	44.0%	12.32	14.40
3630752	$30.46	105	7.4	2	45.0%	25.81	14.6	$17.87	75	13.2	2	45.0%	12.31	27.60
3630807	$255.42	75	4.0	1	4.9%	15.63	1.4	$213.46	75	14.5	1	4.9%	12.81	0.60
3630961	$28.38	105	7.3	1	48.2%	23.1	16.8	$21.17	75	13.6	1	48.2%	11.14	16.70
3631022	$98.93	75	3.9	1	13.2%	14.64	3.2	$85.11	75	14.4	1	13.2%	12.05	2.50
3631137	$94.73	75	3.8	1	18.2%	16.91	6.1	$21.39	75	13.1	1	43.8%	12.32	24.60
3631258	$40.36	85	4.9	1	44.9%	18.3	15.6	$32.44	75	13.5	1	44.9%	12.33	14.30
3631291	$27.67	105	7.5	1	44.3%	22.75	12.7	$20.33	75	13.9	1	44.3%	11.00	11.80
3631445	$29.33	105	7.5	1	44.6%	25.81	12.6	$16.79	75	13.5	1	44.6%	12.31	23.10
3631533	$121.27	75	3.9	1	9.3%	11.87	2.7	$103.09	75	14.4	1	9.3%	9.79	1.70
3631643	$24.51	105	7.5	5	47.5%	21.46	12.2	$13.59	95	19.8	5	47.5%	15.06	33.50
3631709	$26.02	105	7.4	1	47.7%	22.83	12.9	$16.08	75	13.1	1	47.7%	11.04	23.50
3631786	$40.42	105	7.2	2	46.9%	37.27	19.5	$23.91	85	15.0	2	46.9%	21.10	45.00
3631852	$36.91	75	3.9	1	38.1%	12.49	7.1	$32.26	75	14.3	1	38.1%	10.33	5.70
3631896	$30.89	105	7.3	12	46.1%	25.81	16.1	$18.50	95	18.7	12	46.1%	17.93	44.30
3631918	$26.09	105	7.5	1	44.6%	22.72	10.9	$14.97	75	13.8	1	44.6%	10.98	19.50
3631940	$35.99	105	7.2	1	45.1%	28.5	19.4	$26.46	75	13.3	1	45.1%	13.44	18.50
3632017	$64.62	75	3.8	1	29.9%	18.78	8	$55.75	75	14.1	1	29.9%	15.41	6.50
3632094	$46.58	75	4.0	1	28.6%	14.98	3.6	$40.12	75	14.6	1	28.6%	12.35	2.50
3632325	$32.58	105	7.3	1	44.2%	25.83	16.5	$22.68	75	13.5	1	44.2%	12.32	17.30
3632391	$24.91	105	7.4	3	47.3%	19.86	13.9	$15.02	95	19.0	3	47.3%	13.97	38.40
3632424	$39.21	75	3.8	1	44.7%	14.95	8.8	$34.46	75	14.1	1	44.7%	12.34	7.30
3632523	$28.93	105	7.5	1	44.2%	25.81	12	$15.68	75	13.7	1	44.2%	12.31	22.30
3632578	$53.31	75	3.6	1	37.9%	14.42	12.4	$48.28	75	13.5	1	37.9%	11.90	11.60
3632710	$30.28	105	7.5	3	43.7%	25.82	13.1	$16.35	95	19.4	3	43.7%	17.93	35.90
3632732	$31.46	105	7.4	10	45.0%	25.81	15.8	$18.70	95	18.7	10	45.0%	17.93	43.40
3632754	$29.47	105	7.5	3	43.9%	25.82	12.5	$14.91	95	20.0	3	43.9%	17.91	33.60
3632776	$32.04	105	7.3	2	44.3%	25.81	15.8	$19.16	95	18.9	2	44.3%	17.92	35.40
3632842	$29.04	105	7.5	2	44.2%	25.81	11.9	$15.19	95	19.7	2	44.2%	17.91	32.60
3632963	$38.04	105	7.0	1	45.3%	25.84	22.6	$28.33	75	12.6	1	45.3%	12.32	23.70
3633128	$79.15	75	3.8	1	17.7%	11.4	6.1	$69.74	75	14.1	1	17.7%	9.43	5.30
3633139	$26.76	105	7.6	15	45.0%	25.81	10.9	$13.29	95	20.4	15	45.0%	17.94	29.10
3634044	$94.67	75	4.0	1	13.5%	15.03	2.5	$81.28	75	14.5	1	13.5%	12.37	1.70
3634118	$28.12	105	7.5	2	44.8%	25.81	11.3	$14.06	95	19.9	2	44.8%	17.91	31.00
3634121	$30.01	105	7.5	3	45.5%	26.28	14.2	$16.51	95	19.3	3	45.5%	18.24	38.70
3634198	$25.89	105	7.6	2	44.9%	25.81	9.3	$12.76	95	20.4	2	44.9%	17.91	23.80
3634220	$167.58	75	4.0	1	7.2%	15.09	1.3	$140.63	75	14.6	1	7.2%	12.39	0.40
3634286	$28.54	105	7.6	2	44.8%	25.81	12.1	$14.33	95	20.0	2	44.8%	17.91	32.50
3634297	$66.62	75	3.9	1	21.2%	15	4.7	$58.04	75	14.4	1	21.2%	12.36	3.90
3634308	$40.52	75	3.8	1	44.6%	14.94	9.7	$32.83	75	14.0	1	38.5%	12.33	9.30
3634319	$75.14	75	4.0	1	17.7%	15.02	3.3	$64.16	75	14.5	1	17.7%	12.36	2.40
3634374	$26.21	105	7.6	24	44.8%	25.81	9.7	$12.86	95	20.3	24	44.8%	17.94	26.50
3634451	$45.55	75	3.7	1	43.9%	16.44	11.1	$37.46	75	13.8	1	43.9%	13.54	10.40
3634484	$33.17	105	7.3	2	44.6%	25.81	17.5	$20.60	95	18.1	2	44.6%	17.91	48.10
3634495	$34.72	105	7.3	1	43.4%	25.83	18.5	$24.33	75	13.3	1	43.4%	12.32	20.00
3634660	$47.79	75	3.8	1	38.0%	14.97	9.5	$42.54	75	13.9	1	38.0%	12.34	8.50
3634693	$29.37	105	7.5	2	44.7%	25.81	13	$15.80	95	19.6	2	44.7%	17.91	35.60
3634786	$38.22	85	5.0	1	41.2%	19.61	10	$30.54	75	14.0	1	41.2%	13.16	8.40
3634803	$43.70	75	3.8	1	40.1%	14.96	8.6	$38.03	75	14.1	1	40.1%	12.34	7.00
3634847	$36.45	105	7.4	2	46.5%	36.98	14.5	$18.49	95	19.3	2	46.5%	25.27	39.40
3634979	$52.93	75	3.9	1	27.0%	15.4	4.7	$45.82	75	14.4	1	27.0%	12.68	3.60
3635056	$29.37	105	7.5	12	45.0%	25.81	13.1	$15.89	95	19.5	12	45.0%	17.93	36.00

3635111	$41.41	75	3.6	1	47.7%	11.36	14.8	$37.38	95	20.1	1	37.6%	13.48	10.80
3635144	$56.17	75	4.0	1	23.2%	13.74	4.1	$48.72	75	14.4	1	23.2%	11.34	3.20
3635155	$33.55	105	7.4	1	47.1%	32.8	14.9	$22.99	75	13.9	1	47.1%	15.27	14.20
3635254	$31.01	105	7.4	9	45.0%	25.81	15.2	$17.79	95	18.8	9	45.0%	17.93	41.80
3635276	$26.73	105	7.4	2	47.9%	22.35	14.9	$16.85	95	19.5	2	47.9%	15.64	30.30
3635353	$63.12	75	3.9	1	21.7%	11.72	5.6	$51.47	75	14.2	1	21.7%	9.70	4.30
3635364	$28.60	105	7.4	1	46.6%	25.66	13.5	$17.45	75	13.5	1	46.6%	12.24	22.00
3635474	$30.37	105	7.4	1	44.4%	25.81	13.8	$17.59	75	13.2	1	44.4%	12.31	26.20
3635573	$55.50	75	4.0	1	24.6%	14.99	4.1	$47.59	75	14.5	1	24.6%	12.35	3.00
3635672	$26.14	105	7.5	6	47.3%	25.51	10.7	$13.04	95	20.0	6	47.3%	17.75	29.60
3635694	$27.06	105	7.4	3	46.2%	20.74	15.5	$16.41	95	19.0	3	46.2%	14.56	42.20
3635710	$28.91	105	7.3	1	46.0%	20.83	17.7	$20.75	75	13.0	1	46.0%	10.18	25.90
3635738	$77.76	75	3.9	1	17.5%	14.7	4	$67.05	75	14.4	1	17.5%	12.11	3.20
3635771	$40.43	75	3.7	1	45.7%	13.31	11.4	$35.49	75	13.8	1	45.7%	11.00	9.60
3635969	$26.73	105	7.6	4	44.0%	25.82	9.7	$13.10	95	20.2	4	44.0%	17.93	26.50
3635980	$29.82	105	7.5	3	44.3%	25.81	13.3	$16.00	95	19.7	3	44.3%	17.93	36.30
3636156	$404.39	75	4.0	1	3.1%	16.5	0.7	$366.72	75	14.6	1	3.1%	13.49	1.86
3636167	$37.64	105	7.2	1	47.8%	34.76	18.9	$26.58	75	13.3	1	47.8%	16.09	18.00
3636233	$29.05	105	7.5	12	44.8%	25.81	12.4	$15.55	95	19.5	12	44.8%	17.93	34.30
3637044	$26.07	105	7.6	19	44.8%	25.81	9.4	$12.71	95	20.3	19	44.8%	17.94	25.80
3637132	$34.71	105	7.3	2	44.4%	28.01	17.5	$21.58	95	18.4	2	44.4%	19.32	44.60
3637198	$30.48	105	7.4	1	44.2%	25.81	13.8	$18.84	75	13.6	1	44.2%	12.32	19.60
3637275	$30.18	105	7.5	4	45.1%	27.24	13.4	$16.15	95	19.6	4	45.1%	18.77	36.70
3637528	$42.05	75	4.0	1	30.8%	12.77	5	$36.56	75	14.5	1	30.8%	10.56	3.80
3637583	$29.20	105	7.5	3	44.8%	25.81	13	$15.43	95	19.9	3	44.8%	17.92	35.10
3637737	$32.16	105	7.5	31	46.6%	33.03	12.1	$15.78	95	19.9	31	46.6%	22.80	33.50
3637803	$32.13	105	7.4	2	43.6%	25.82	15.4	$18.46	95	18.8	2	43.6%	17.91	42.30
3637840	$33.97	105	7.2	1	44.9%	25.81	18.8	$22.23	85	15.6	1	44.9%	15.02	34.00
3637869	$29.61	105	7.5	9	44.7%	25.81	13.2	$16.01	95	19.5	9	44.7%	17.93	36.10
3638022	$29.29	105	7.5	2	44.9%	25.81	12.9	$15.74	95	19.5	2	44.9%	17.91	35.30
3638077	$22.79	105	7.6	12	46.2%	18.56	11.3	$12.82	95	19.9	12	46.2%	13.11	31.00
3638253	$32.96	105	7.2	1	45.9%	25.81	18.4	$22.52	75	12.6	1	45.9%	12.32	27.90
3638264	$26.20	105	7.5	18	48.2%	24.92	12.2	$14.00	95	19.8	18	48.2%	17.37	33.40
3638275	$28.06	105	7.3	1	48.2%	23.07	16.2	$18.28	85	16.0	1	48.2%	13.54	29.50
3638451	$38.20	85	4.9	1	44.3%	17.8	13.7	$30.20	75	13.6	1	44.3%	12.01	12.60
3638500	$29.43	105	7.4	9	44.8%	25.81	12.8	$15.93	95	19.3	9	44.8%	17.93	35.30
3638506	$64.04	75	3.9	1	20.9%	14.24	4.1	$55.47	75	14.4	1	20.9%	11.74	3.20
3638539	$28.49	105	7.5	7	45.0%	25.81	11.8	$14.92	95	19.7	7	45.0%	17.93	32.40
3638748	$29.06	105	7.5	7	47.0%	26.58	14.1	$15.69	95	19.6	7	47.0%	18.46	38.20
3638781	$26.21	105	7.5	6	46.0%	22.96	12	$12.67	95	20.2	17	44.4%	16.05	27.20
3638825	$34.86	85	5.0	1	46.8%	18.6	12	$27.51	75	13.8	1	46.8%	12.52	11.00
3638934	$32.95	75	4.0	1	44.4%	14.94	6.1	$28.42	75	14.6	1	44.4%	12.33	4.90
3638946	$29.51	105	7.5	1	43.3%	25.82	11.4	$18.65	75	13.8	1	43.3%	12.32	14.70
3639089	$31.26	105	7.3	1	45.8%	25.83	16.3	$22.64	75	13.6	1	45.8%	12.32	16.10
3639232	$23.94	105	7.7	8	47.6%	24.64	9.8	$11.74	95	20.6	8	47.6%	17.18	26.40
3639243	$62.61	75	3.8	1	26.9%	14.22	8.1	$54.23	75	14.0	1	26.9%	11.73	6.60
3639309	$31.35	85	5.2	1	42.9%	18.3	7.8	$24.80	75	14.4	1	42.9%	12.33	6.40
3639397	$39.15	105	6.9	1	44.3%	21.39	26.7	$31.22	95	18.7	1	44.3%	14.99	26.80
3639463	$71.93	75	3.9	1	19.9%	12.92	5.4	$59.42	75	14.2	1	19.9%	10.67	4.60
3639562	$30.89	105	7.4	1	44.2%	25.83	14.2	$21.26	75	13.7	1	44.2%	12.32	14.80
3639672	$28.79	105	7.5	10	45.0%	25.81	12.2	$15.36	95	19.5	10	45.0%	17.93	33.80
3639694	$32.13	105	7.3	2	44.4%	25.81	15.8	$19.31	95	18.4	2	44.4%	17.91	43.70
3639727	$27.69	105	7.6	17	44.3%	27.7	9.6	$13.44	95	20.1	17	44.3%	19.11	26.60
3639853	$29.79	105	7.5	1	44.9%	25.81	14	$16.84	75	13.6	1	44.9%	12.31	26.00
3640175	$239.47	75	3.9	1	5.5%	14.57	3	$200.22	75	14.3	1	5.5%	11.96	1.90
3640189	$24.94	105	7.6	9	47.4%	22.24	12.3	$13.67	95	20.0	9	47.4%	15.58	33.60
3640200	$43.43	75	3.9	1	39.9%	14.96	8.6	$36.17	75	14.2	1	39.9%	12.34	7.10

3640233	$63.50	75	3.7	1	28.9%	14.98	9.4	$55.08	75	13.8	1	28.9%	12.35	7.80
3640398	$32.18	105	7.3	4	45.3%	25.81	17.1	$19.55	95	18.5	4	45.3%	17.93	46.70
3640486	$28.81	105	7.3	3	47.3%	22.13	17.5	$18.49	95	18.4	3	47.3%	15.47	47.70
3640508	$30.16	105	7.4	1	44.6%	25.83	13.8	$20.88	75	13.8	1	44.6%	12.32	13.90
3640530	$29.54	105	7.5	5	45.2%	25.81	13.5	$16.09	95	19.4	5	45.2%	17.93	37.00
3640585	$35.32	105	7.2	1	44.3%	27.09	18.8	$25.74	75	12.9	1	44.3%	12.78	23.20
3640607	$30.41	105	7.5	1	46.4%	27.86	14.2	$18.28	75	13.5	1	46.4%	13.14	23.50
3640648	$35.21	105	7.1	1	45.6%	25.81	19.5	$24.54	75	12.6	1	45.6%	12.32	26.70
3640689	$29.32	105	7.5	3	44.7%	25.81	12.6	$15.76	95	19.4	3	44.7%	17.93	34.70
3640761	$25.24	105	7.5	2	49.4%	25.8	10.7	$12.98	95	19.8	2	49.4%	17.92	29.50
3640838	$29.34	105	7.5	9	45.2%	25.81	13.3	$15.84	95	19.5	9	45.2%	17.93	36.30
3640937	$31.67	105	7.3	1	44.9%	25.81	15.8	$20.30	75	12.8	1	44.9%	12.32	29.30
3641003	$29.32	105	7.5	2	44.9%	25.81	13.1	$15.77	85	16.5	2	44.9%	15.01	30.10
3641036	$52.42	75	3.9	1	27.7%	12.61	6	$42.76	75	14.2	1	27.7%	10.42	4.60
3641069	$28.57	105	7.3	2	47.7%	23.83	15.9	$17.16	95	18.9	2	47.7%	16.62	37.10
3641135	$23.72	105	7.5	5	47.4%	19.33	13.1	$13.74	95	19.8	5	47.4%	13.63	35.80
3641223	$34.30	105	6.9	1	47.3%	16.22	28.2	$27.59	105	18.5	1	47.3%	13.38	34.70
3641333	$30.93	105	7.5	2	43.8%	25.82	14.3	$17.48	85	16.4	2	43.8%	15.01	32.80
3641432	$36.78	105	7.1	1	44.4%	25.81	20.4	$25.66	75	12.5	1	44.4%	12.32	28.30
3641465	$31.65	105	7.3	1	45.8%	25.81	16.8	$20.70	75	13.0	1	45.8%	12.32	26.30
3641487	$35.95	105	7.1	1	44.8%	25.81	19.6	$25.05	75	12.6	1	44.8%	12.32	26.70
3641520	$104.70	75	4.0	1	11.1%	14.2	1.4	$88.61	75	14.6	1	11.1%	11.69	0.60
3641553	$31.68	105	7.4	2	44.8%	25.81	16.1	$18.35	95	18.8	2	44.8%	17.91	43.80
3641784	$65.16	75	3.9	1	21.4%	14.76	4.5	$56.74	75	14.3	1	21.4%	12.16	3.70
3641872	$53.00	75	3.9	1	25.1%	12.73	5.4	$45.84	75	14.3	1	25.1%	10.53	4.20
3642026	$25.96	105	7.5	2	47.6%	23.07	13	$14.92	95	19.6	2	47.6%	16.11	33.10
3642081	$27.02	105	7.6	24	45.0%	25.81	11.2	$13.68	95	20.2	24	45.0%	17.94	30.30
3642147	$29.19	105	7.4	1	47.5%	25.81	15	$18.13	75	13.1	1	47.5%	12.31	27.80
3642224	$27.74	105	7.4	2	47.4%	24.23	14.1	$15.92	95	19.0	2	47.4%	16.88	39.00
3642323	$28.34	105	7.4	1	47.0%	23.61	15.5	$20.93	75	13.8	1	47.0%	11.37	14.90
3642345	$34.96	95	6.0	1	48.7%	21.31	19.2	$28.02	75	13.2	1	48.7%	12.01	18.40
3642378	$90.87	75	3.8	1	17.3%	14.4	6.1	$79.35	75	14.0	1	17.3%	11.86	5.30
3642455	$34.26	95	6.1	1	44.6%	21.93	14.5	$26.26	75	13.6	1	44.6%	12.33	14.10
3642488	$31.38	105	7.5	1	44.3%	27.39	13.9	$18.93	75	13.5	1	44.3%	12.92	20.40
3642554	$27.62	105	7.6	12	44.5%	25.81	11.6	$14.11	95	20.1	12	44.5%	17.93	31.40
3642609	$181.02	75	4.0	1	6.2%	13.06	1.5	$21.31	75	14.0	1	42.7%	12.32	15.40
3642642	$96.90	75	3.9	1	14.3%	15.53	3.6	$84.02	75	14.3	1	14.3%	12.77	2.90
3642741	$30.56	105	7.4	2	46.0%	24.93	16.5	$18.42	95	18.8	2	46.0%	17.33	44.90
3642829	$33.13	85	5.0	1	45.3%	16.54	11.2	$27.11	75	14.0	1	45.3%	11.21	9.50
3642884	$30.23	105	7.5	1	46.1%	28.34	13.1	$17.48	75	13.5	1	46.1%	13.36	22.40
3642928	$36.24	85	4.8	1	47.7%	15.97	15.8	$29.66	75	13.4	1	47.7%	10.84	14.40
3642950	$25.93	105	7.5	1	44.7%	20.48	12.9	$19.51	75	14.0	1	44.7%	10.01	12.00
3642972	$45.20	75	3.9	1	28.1%	11.7	5.3	$39.19	75	14.3	1	28.1%	9.69	4.10
3643005	$37.19	105	7.1	2	44.6%	25.81	20.9	$23.76	85	14.4	2	44.6%	15.01	44.80
3643082	$23.01	105	7.5	13	47.6%	19.06	12.2	$13.23	95	19.7	13	47.6%	13.46	33.60
3643192	$28.08	105	7.5	2	44.5%	25.81	10.9	$14.52	85	16.9	2	44.5%	15.01	24.60
3643214	$64.21	75	4.0	1	18.6%	12.03	3.8	$55.65	75	14.4	1	18.6%	9.95	3.00
3643401	$41.71	105	6.7	1	49.2%	25.8	29.5	$30.17	85	14.2	1	49.2%	15.02	41.30
3643511	$30.80	105	7.4	1	43.8%	25.82	13.8	$20.29	75	13.7	1	43.8%	12.32	17.30
3643533	$120.00	75	4.0	1	10.3%	15.06	1.7	$102.06	75	14.6	1	10.3%	12.38	1.00
3643720	$28.07	105	7.5	2	46.9%	25.81	12.9	$15.63	85	16.4	2	46.9%	15.01	29.80
3643874	$27.49	105	7.6	7	44.8%	25.81	11.8	$14.02	95	20.3	7	44.8%	17.94	31.70
3643885	$28.41	105	7.6	2	46.0%	27.86	11	$13.87	95	20.0	2	46.0%	19.20	30.30
3643918	$34.15	75	3.9	1	37.7%	10.06	7.2	$30.61	75	14.3	1	37.7%	8.36	6.20
3643951	$57.64	75	3.4	1	43.8%	14.96	16.7	$50.65	75	13.0	1	43.8%	12.34	15.90
3643962	$30.98	105	7.4	2	46.9%	27.24	16	$18.28	85	15.8	2	46.9%	15.68	36.80
3644006	$41.41	75	3.8	1	43.2%	14.95	9.3	$36.14	75	14.1	1	43.2%	12.34	7.70

3644149	$33.19	95	6.2	1	46.2%	25.36	12	$24.19	75	14.0	1	46.2%	14.09	11.50
3644193	$27.55	85	5.1	1	47.6%	14.48	9.3	$21.89	75	14.2	1	47.6%	9.88	9.30
3644226	$49.85	75	3.9	1	29.7%	14.43	6.3	$43.28	75	14.2	1	29.7%	11.90	5.00
3644424	$68.61	75	4.0	1	20.5%	17	2.8	$58.82	75	14.5	1	20.5%	13.97	2.00
3644534	$30.35	105	7.4	5	45.1%	25.81	14.2	$17.12	95	18.9	5	45.1%	17.93	39.40
3644677	$64.12	75	3.9	1	23.4%	15.15	5.8	$55.05	75	14.2	1	23.4%	12.49	4.50
3644710	$28.97	105	7.4	3	46.9%	25.81	14.3	$16.20	95	19.2	3	46.9%	17.93	39.30
3644787	$26.99	105	7.6	4	44.8%	25.81	11	$13.50	95	20.4	4	44.8%	17.94	29.60
3644792	$61.65	75	4.0	1	21.4%	15	3.3	$53.05	75	14.6	1	21.4%	12.36	2.40
3644831	$30.92	105	7.5	6	44.0%	25.82	14.7	$17.00	95	19.5	6	44.0%	17.93	39.70
3644853	$30.10	95	6.2	1	45.5%	20.09	12.5	$23.44	75	13.9	1	45.5%	11.37	11.50
3644897	$27.90	105	7.5	4	45.0%	25.81	11.1	$13.85	95	20.0	4	45.0%	17.94	30.30
3644908	$26.44	105	7.6	2	44.9%	25.81	10.1	$13.68	85	17.1	2	44.9%	15.01	22.40
3645018	$26.95	105	7.5	2	46.4%	23.96	12.5	$14.77	95	19.5	2	46.4%	16.69	34.50
3645073	$65.22	75	4.0	1	20.3%	15	3.3	$55.88	75	14.5	1	20.3%	12.36	2.30
3645139	$38.01	105	7.0	7	45.7%	25.81	23.3	$24.75	95	16.8	7	45.7%	17.93	58.20
3645392	$46.22	75	3.8	1	41.0%	15.12	10.7	$40.30	75	13.9	1	41.0%	12.47	8.90
3645480	$31.25	95	6.3	1	46.6%	24.41	10.9	$23.13	75	14.1	1	46.6%	13.60	10.20
3645557	$42.73	75	3.8	1	38.2%	13.91	7.8	$38.04	75	14.1	1	38.2%	11.49	6.90
3645573	$48.90	85	4.7	1	40.8%	17.44	17.5	$40.48	75	13.0	1	40.8%	11.77	16.70
3645634	$39.36	95	6.1	1	44.7%	25.54	17.2	$30.40	75	13.5	1	44.7%	14.18	16.20
3645700	$35.59	105	7.2	2	44.2%	25.81	20.2	$22.96	95	18.0	2	44.2%	17.92	46.50
3645986	$26.34	105	7.6	13	44.7%	25.81	9.8	$12.94	95	20.3	13	44.7%	17.94	26.70
3645997	$25.83	105	7.6	10	44.7%	25.81	9.1	$12.36	95	20.5	10	44.7%	17.94	24.70
3646074	$29.06	105	7.5	7	45.5%	25.81	13.1	$15.67	95	19.5	7	45.5%	17.94	35.90
3646085	$29.46	105	7.5	7	45.5%	25.81	13.7	$16.10	95	19.4	7	45.5%	17.93	37.40
3646107	$46.90	85	4.8	1	37.5%	18.32	14	$39.31	75	13.4	1	37.5%	12.33	13.20
3646140	$34.12	105	7.2	4	45.9%	25.81	19.9	$22.52	95	17.6	4	45.9%	17.93	54.00
3646151	$28.95	105	7.5	4	45.9%	28.34	11.2	$14.51	95	19.9	4	45.9%	19.58	30.90
3646162	$30.78	105	7.4	1	44.2%	25.81	14.3	$20.86	75	13.7	1	44.2%	12.32	16.70
3646206	$31.62	75	3.9	1	46.4%	12.58	7.8	$26.81	75	14.2	1	46.4%	10.42	6.80
3646239	$30.72	105	7.2	1	48.4%	23.6	19.9	$23.24	75	13.2	1	48.4%	11.37	20.00
3646349	$30.78	105	7.4	3	44.3%	25.81	14.2	$17.22	95	19.0	3	44.3%	17.91	39.10
3646360	$28.19	105	7.5	1	44.1%	21.68	14.8	$17.13	75	13.5	1	44.1%	10.54	27.50
3646404	$30.85	105	7.4	11	45.3%	25.81	15.3	$17.68	95	18.9	11	45.3%	17.93	42.00
3646415	$29.02	105	7.3	2	47.2%	22.35	17.8	$18.49	95	18.5	2	47.2%	15.63	48.10
3646503	$29.02	105	7.3	1	47.3%	20.94	18.9	$20.69	75	12.7	1	47.3%	10.22	28.80
3646514	$30.70	105	7.4	10	44.9%	25.81	14.6	$17.46	95	18.8	10	44.9%	17.93	40.30
3646536	$30.45	105	7.3	2	43.7%	22.72	15.9	$18.76	95	19.0	2	43.7%	15.87	34.70
3646646	$129.86	75	3.9	1	12.4%	20.49	2.8	$110.27	75	14.4	1	12.4%	16.74	2.00
3646668	$28.45	105	7.5	10	44.9%	25.81	11.9	$14.33	95	20.0	10	44.9%	17.93	32.40
3646750	$47.42	75	3.9	1	33.8%	14.97	6.2	$39.75	75	14.2	1	33.8%	12.35	5.30
3646811	$34.40	95	6.1	1	47.0%	21.92	16.8	$25.75	75	13.3	1	44.3%	12.32	17.80
3646866	$34.75	95	6.2	1	44.9%	24.72	13.3	$24.99	75	13.8	1	44.9%	13.76	13.70
3646976	$32.53	105	7.3	4	45.3%	25.81	17.5	$19.96	95	18.4	4	45.3%	17.93	47.90
3646998	$27.33	95	6.3	1	47.3%	17.31	13.1	$21.40	75	13.9	1	47.3%	9.92	12.80
3647042	$27.69	105	7.6	14	44.6%	25.81	10.4	$13.40	95	20.1	14	44.6%	17.93	28.30
3647108	$46.83	75	3.9	1	30.6%	14	5.9	$40.38	75	14.3	1	30.6%	11.55	4.60
3647229	$49.96	75	4.0	1	26.6%	14.51	4	$43.18	75	14.5	1	26.6%	11.97	2.90
3647273	$40.69	95	5.9	1	44.9%	21.93	20.2	$31.21	75	13.1	1	44.9%	12.33	20.00
3647306	$31.33	105	7.3	6	45.5%	25.81	16	$18.73	95	18.6	6	45.5%	17.93	44.10
3647361	$38.51	75	3.9	1	45.3%	14.94	8.8	$32.71	75	14.1	1	45.3%	12.33	7.70
3647405	$42.45	85	4.8	1	44.4%	18.3	16.7	$33.12	75	13.2	1	44.4%	12.33	16.10
3647427	$88.12	75	4.0	1	13.8%	13.06	3.2	$75.79	75	14.4	1	13.8%	10.78	2.40
3647548	$26.77	105	7.4	1	45.2%	20.74	14.2	$16.45	85	16.5	1	45.2%	12.27	26.30
3647554	$52.53	85	4.5	1	44.2%	18.31	22.5	$43.71	75	12.6	1	44.2%	12.33	20.10
3647636	$26.07	105	7.6	9	45.0%	25.81	9.8	$12.58	95	20.5	9	45.0%	17.94	26.10

3647680	$44.97	85	4.8	1	41.2%	18.31	15.8	$37.93	75	13.3	1	41.2%	12.33	14.90
3647702	$35.27	105	7.1	1	47.9%	25.84	21.7	$27.12	75	12.8	1	47.9%	12.32	21.10
3647757	$27.30	105	7.5	2	46.2%	25.81	11.2	$14.06	85	16.8	2	46.2%	15.00	25.90
3647823	$29.92	105	7.5	1	44.9%	27.24	12.9	$17.71	75	13.7	1	44.9%	12.85	20.60
3647988	$32.22	105	7.3	3	44.9%	25.81	16.8	$19.41	95	18.6	3	44.9%	17.93	45.90
3648010	$29.74	105	7.5	4	44.6%	25.81	13.2	$16.14	95	19.4	4	44.6%	17.93	36.20
3648054	$38.43	105	7.0	5	46.8%	25.81	25.1	$25.91	95	16.6	5	46.8%	17.93	62.10
3648090	$37.35	105	7.1	2	44.2%	25.81	21	$24.16	95	18.0	2	44.2%	17.92	45.40
3648142	$30.70	105	7.4	1	44.3%	25.81	14.2	$17.82	75	13.2	1	44.3%	12.31	26.90
3648175	$31.40	105	7.3	2	46.9%	25.65	17.7	$19.42	95	18.3	2	46.9%	17.82	48.20
3648197	$40.99	95	5.9	1	45.4%	22.97	19.8	$31.66	75	12.9	1	45.4%	12.86	20.80
3648208	$31.96	105	7.4	1	43.6%	25.82	15.3	$20.59	75	13.5	1	43.6%	12.32	21.00
3648241	$52.06	75	3.8	1	33.2%	14.97	8.2	$46.26	75	14.0	1	33.2%	12.35	7.30
3648296	$39.10	75	3.8	1	46.2%	14.63	9.9	$32.44	75	14.0	1	46.2%	12.08	9.20
3648450	$32.16	105	7.3	1	45.6%	25.81	17.4	$21.04	75	13.1	1	45.6%	12.32	25.00
3648483	$47.61	75	3.9	1	34.3%	14.58	7.2	$40.17	75	14.2	1	34.3%	12.02	6.30
3648538	$32.36	105	7.3	1	45.9%	25.84	17.8	$23.78	75	13.4	1	45.9%	12.32	17.30
3648593	$52.01	75	3.7	1	43.3%	21.1	10.5	$45.11	75	13.8	1	43.3%	17.28	8.80
3648750	$29.93	105	7.4	1	46.8%	25.81	15.6	$20.24	75	13.6	1	46.8%	12.32	19.20
3648879	$30.99	105	7.4	1	44.6%	25.81	15	$18.24	75	13.2	1	44.6%	12.31	28.20
3648945	$29.57	105	7.4	1	46.6%	23.71	16.7	$19.75	85	16.5	1	46.6%	13.89	24.90
3649066	$31.16	105	7.4	6	45.4%	25.81	15.8	$18.57	95	18.7	6	45.4%	17.93	43.50
3649121	$26.80	105	7.6	23	44.2%	25.81	10.3	$12.99	95	20.6	23	44.2%	17.93	27.30
3649220	$92.73	75	3.9	1	18.3%	21.04	3.8	$79.21	75	14.4	1	18.3%	17.20	3.00
3649231	$27.56	105	7.5	1	45.1%	25.81	10.6	$15.87	75	13.9	1	45.1%	12.32	17.10
3649242	$27.97	105	7.4	1	48.0%	24.23	15	$17.76	75	13.2	1	48.0%	11.64	22.40
3649330	$36.45	105	7.1	2	45.0%	25.81	20.3	$23.57	95	17.8	2	45.0%	17.92	44.00
3649363	$32.48	105	7.3	3	44.2%	25.81	16.3	$19.51	95	18.5	3	44.2%	17.92	44.70
3649407	$29.17	105	7.5	9	44.3%	25.81	12	$15.37	95	19.6	9	44.3%	17.93	33.10
3649418	$36.98	85	4.9	1	43.9%	15.82	14	$29.07	75	13.5	1	43.9%	10.75	13.50
3649424	$49.52	85	4.6	1	45.2%	18.31	21.6	$41.33	75	12.9	1	45.2%	12.33	18.90
3649429	$41.86	75	3.7	1	45.7%	14.48	11.5	$36.70	75	13.9	1	45.7%	11.96	9.80
3649473	$47.61	75	3.7	1	38.2%	14.49	9.9	$42.64	75	13.9	1	38.2%	11.96	9.00
3649506	$35.81	75	3.9	1	44.9%	14.94	8.2	$28.95	75	14.2	1	44.9%	12.33	7.70
3649605	$75.70	75	3.8	1	20.8%	15	5.7	$65.09	75	14.1	1	20.8%	12.36	4.40
3649726	$28.95	105	7.5	1	46.1%	27.09	12.7	$17.42	75	13.8	1	46.1%	12.78	18.10
3649748	$52.45	75	3.9	1	31.2%	14.89	6.9	$43.04	75	14.2	1	31.2%	12.28	5.50
3649781	$47.37	75	3.9	1	31.7%	14.97	6.1	$41.44	75	14.3	1	31.7%	12.35	5.20
3649825	$28.53	105	7.5	7	44.9%	25.81	11.8	$14.99	95	19.6	7	44.9%	17.93	32.50
3649891	$31.35	105	7.3	4	46.5%	25.51	17.7	$19.19	95	18.6	4	46.5%	17.74	47.90
3649902	$37.43	75	3.8	1	46.6%	14.26	9.5	$31.99	75	14.1	1	46.6%	11.78	8.20
3649946	$38.29	75	3.8	1	46.9%	15.18	9.3	$32.28	75	14.0	1	46.9%	12.53	8.40
3650034	$27.07	105	7.6	11	44.1%	25.82	10.3	$13.41	95	20.2	11	44.1%	17.93	28.00
3650067	$25.84	105	7.6	5	44.9%	25.81	9.1	$12.48	95	20.3	5	44.9%	17.94	24.90
3650100	$29.02	105	7.5	23	44.0%	25.82	11.5	$15.19	95	19.6	23	44.0%	17.93	31.90
3650221	$30.93	105	7.3	2	47.5%	25.81	17.4	$19.54	85	15.6	2	47.5%	15.01	37.90
3650257	$51.17	75	3.7	1	33.7%	12.72	9.9	$44.55	75	13.8	1	33.7%	10.52	8.20
3650298	$29.25	105	7.5	1	45.8%	28.18	11.5	$17.53	75	13.9	1	45.8%	13.29	15.50
3650353	$33.99	105	7.2	2	44.7%	25.81	18.7	$21.65	95	18.3	2	44.7%	17.92	42.70
3650397	$25.61	105	7.6	5	44.8%	25.81	8.9	$12.04	95	20.7	5	44.8%	17.94	23.80
3650551	$32.40	105	7.4	1	44.4%	29.02	13.4	$17.75	85	16.5	1	44.4%	16.83	25.80
3650573	$57.68	75	4.0	1	22.5%	13.6	4.1	$50.27	75	14.4	1	22.5%	11.22	3.30
3650617	$28.34	105	7.6	29	44.2%	25.81	11.1	$13.96	95	20.0	29	44.2%	17.93	30.10
3650705	$29.31	95	6.4	1	44.2%	21.93	10.4	$21.83	75	14.3	1	44.2%	12.33	9.30
3650727	$48.97	75	3.9	1	33.7%	14.97	7.1	$41.27	75	14.2	1	33.7%	12.35	6.20
3650837	$30.59	105	7.4	5	43.6%	25.82	13.4	$16.76	95	19.2	5	43.6%	17.93	36.90
3651000	$26.52	105	7.7	1904	44.1%	25.81	10	$12.65	95	20.8	1904	44.1%	17.94	26.30

3651011	$29.73	105	7.5	1	45.5%	27.09	13.3	$16.58	85	16.7	1	45.5%	15.60	27.30
3651055	$29.09	105	7.5	31	48.1%	29.52	12.2	$14.72	95	19.9	31	48.1%	20.45	33.60
3651110	$79.97	75	3.9	1	19.4%	17.21	4.7	$69.25	75	14.3	1	19.4%	14.14	3.90
3651275	$26.25	105	7.6	3	45.1%	23.71	10.7	$13.26	95	20.0	3	45.1%	16.53	29.50
3651286	$38.72	105	7.0	1	44.9%	25.81	23	$28.09	85	15.5	1	44.9%	15.03	28.50
3651297	$33.67	105	7.2	1	44.6%	25.81	18.1	$22.68	85	15.9	1	44.6%	15.02	30.00
3651396	$28.78	105	7.5	6	44.6%	25.81	12.1	$14.93	95	19.9	6	44.6%	17.93	32.80
3651418	$67.95	75	3.2	1	45.5%	14.96	22.4	$61.02	75	12.1	1	45.5%	12.34	23.20
3651440	$28.87	105	7.5	8	44.6%	25.81	12.3	$15.11	95	19.9	8	44.6%	17.93	33.40
3651467	$35.24	85	5.0	1	41.0%	15.1	11.4	$29.10	75	13.9	1	41.0%	10.28	9.70
3651495	$28.35	105	7.5	8	44.9%	25.81	11.6	$14.69	95	19.8	8	44.9%	17.93	31.70
3651517	$27.34	105	7.6	9	44.9%	25.81	11.5	$13.97	95	20.1	9	44.9%	17.94	31.20
3651528	$31.54	105	7.3	5	45.3%	25.81	16.2	$18.85	95	18.6	5	45.3%	17.93	44.40
3651583	$31.39	105	7.2	1	47.3%	20.43	21.1	$22.88	95	19.0	1	47.3%	14.37	29.50
3651792	$36.63	75	3.8	1	46.8%	13.69	9.5	$30.74	75	14.1	1	46.8%	11.32	8.60
3651847	$47.12	75	3.6	1	45.4%	14.95	13.8	$41.55	75	13.5	1	45.4%	12.34	11.80
3651915	$24.07	105	7.4	1	47.8%	18.41	14.5	$17.27	75	13.6	1	47.8%	9.11	18.80
3652040	$31.86	105	7.5	5	47.0%	33.52	11.5	$15.36	95	19.9	6	47.0%	23.10	31.90
3652078	$29.82	105	7.4	2	44.8%	25.81	13.5	$16.91	85	16.3	2	44.8%	15.01	31.10
3652188	$38.96	105	7.0	1	46.1%	25.83	24.8	$29.29	75	12.5	1	46.1%	12.32	26.20
3653022	$31.69	105	7.3	2	45.2%	25.81	16.2	$19.13	95	18.5	2	45.2%	17.91	44.60
3653055	$33.89	75	3.9	1	46.9%	14.33	8.2	$29.73	75	14.2	1	46.9%	11.83	6.70
3653198	$29.09	105	7.5	5	44.7%	25.81	12.6	$15.32	95	19.8	5	44.7%	17.93	34.20
3653231	$41.86	75	4.0	1	32.3%	14.97	4	$36.34	75	14.6	1	32.3%	12.35	3.00
3653253	$26.19	105	7.6	11	44.8%	25.81	9.6	$12.75	95	20.4	11	44.8%	17.94	26.10
3653264	$27.34	105	7.6	5	44.9%	25.81	11.5	$14.01	95	20.1	5	44.9%	17.94	31.30
3653275	$25.71	105	7.6	8	44.9%	25.81	9.1	$12.27	95	20.5	8	44.9%	17.94	24.60
3653319	$29.95	105	7.4	3	45.1%	25.81	14	$16.60	95	19.2	3	45.1%	17.93	38.40
3653396	$29.02	105	7.5	4	44.8%	25.81	12.3	$15.42	95	19.6	4	44.8%	17.93	33.90
3653462	$66.46	75	3.8	1	26.9%	17.08	7.3	$57.20	75	14.1	1	26.9%	14.04	5.90
3653561	$35.49	105	7.1	5	46.3%	25.81	20.8	$23.00	95	17.5	5	46.3%	17.93	56.10
3653660	$29.67	105	7.5	4	46.3%	28.67	12.3	$15.20	95	19.8	4	46.3%	19.81	33.70
3653682	$25.90	105	7.5	18	47.5%	23.7	12.3	$14.02	95	19.8	18	47.5%	16.56	33.70
3653748	$27.07	105	7.6	7	44.7%	25.81	11	$13.55	95	20.3	7	44.7%	17.94	29.60
3653770	$32.39	95	6.2	1	45.9%	21.92	13.9	$23.96	75	13.8	1	45.9%	12.32	14.20
3653775	$37.60	105	7.0	1	45.9%	25.81	22.9	$27.65	85	15.7	1	45.9%	15.03	27.10
3653792	$28.45	105	7.5	5	45.1%	25.81	12.1	$14.39	95	20.0	5	45.1%	17.94	32.80
3653852	$37.75	105	7.0	5	46.4%	25.81	23.8	$24.64	95	16.8	5	46.4%	17.93	59.40
3653853	$36.08	85	4.7	1	47.5%	12.78	18.2	$30.32	75	13.2	1	47.5%	8.78	16.30
3653979	$26.92	105	7.6	5	47.1%	29.02	9.5	$12.80	95	20.2	5	47.1%	20.07	26.30
3654012	$33.47	105	7.3	1	43.9%	25.85	17.3	$24.72	75	13.5	1	43.9%	12.32	16.40
3654056	$32.98	105	7.2	4	46.4%	25.81	19.1	$21.01	95	17.9	4	46.4%	17.93	52.10
3654078	$33.62	85	5.0	1	46.0%	17.15	11.7	$26.81	75	13.9	1	46.0%	11.60	10.50
3654100	$27.89	105	7.6	2	44.0%	25.82	11.6	$14.29	95	20.2	2	44.0%	17.91	30.50
3654112	$59.27	75	3.6	1	34.1%	14.97	12.2	$53.38	75	13.6	1	34.1%	12.35	11.30
3654144	$31.19	105	7.4	4	44.7%	25.81	15.3	$17.81	95	18.9	4	44.7%	17.93	41.90
3654155	$30.10	95	6.3	1	47.4%	22.69	11.9	$22.66	75	14.1	1	47.4%	12.73	11.10
3654441	$27.47	105	7.6	14	44.9%	25.81	11.7	$14.06	95	20.1	14	44.9%	17.94	31.60
3654452	$47.66	75	3.8	1	35.8%	13.78	8.8	$42.61	75	13.9	1	35.8%	11.38	7.90
3654485	$27.34	105	7.5	8	46.2%	25.81	11.1	$14.23	95	19.7	8	46.2%	17.94	30.90
3654540	$39.25	85	4.8	1	47.5%	18.29	16.4	$30.60	75	13.1	1	45.8%	12.33	18.60
3654551	$28.91	105	7.5	3	45.0%	25.81	12.4	$15.43	95	19.5	3	45.0%	17.92	34.10
3654562	$37.83	105	7.1	1	44.6%	25.81	21.7	$26.33	75	12.0	1	44.6%	12.32	34.30
3654617	$46.12	85	4.8	1	40.1%	18.31	16.2	$37.87	75	13.4	1	40.1%	12.33	14.10
3654639	$30.90	105	7.3	1	48.5%	25.82	18.1	$22.20	75	13.3	1	48.5%	12.32	18.70
3654705	$41.48	105	6.8	2	45.0%	25.81	26.1	$28.75	95	15.8	2	45.0%	17.91	63.70
3654716	$22.83	105	7.6	12	47.9%	20.83	10.4	$11.99	95	20.0	12	47.9%	14.64	29.00

3654837	$33.27	105	7.3	8	46.6%	31	14.6	$18.46	95	18.8	8	46.6%	21.66	41.10
3654848	$64.50	75	3.9	1	26.2%	19.43	5.2	$55.28	75	14.3	1	26.2%	15.93	4.00
3654881	$24.56	105	7.6	7	47.0%	23.32	10.1	$12.34	95	20.0	7	47.0%	16.30	27.90
3655002	$40.26	105	7.1	1	46.5%	32.57	21.2	$28.96	75	13.0	1	46.5%	15.17	21.00
3655167	$32.86	105	7.3	1	44.5%	25.81	16.9	$20.67	85	15.7	1	44.5%	15.02	32.10
3655189	$31.68	105	7.3	4	44.8%	25.81	15.8	$18.92	95	18.6	4	44.8%	17.93	43.50
3655266	$26.14	105	7.5	2	47.4%	23.96	12.1	$14.67	85	16.5	2	47.4%	14.01	27.10
3655321	$43.46	105	6.8	1	45.7%	25.83	29.5	$33.70	75	11.7	1	45.7%	12.32	33.20
3655365	$29.65	105	7.5	1	44.8%	25.99	13.1	$21.31	75	14.0	1	44.8%	12.39	12.20
3655376	$55.01	75	3.9	1	32.4%	20.52	5.6	$47.17	75	14.3	1	32.4%	16.82	4.40
3655530	$30.68	105	7.5	6	43.7%	25.82	14	$16.56	95	19.7	6	43.7%	17.93	37.90
3655574	$26.73	105	7.5	12	47.6%	25.81	11.5	$13.93	95	19.8	12	47.6%	17.95	31.60
3655618	$36.58	85	5.0	1	46.2%	20.06	12	$28.22	75	13.9	1	46.2%	13.45	12.40
3655673	$38.13	85	5.0	1	41.0%	18.21	11.2	$30.94	75	14.0	1	41.0%	12.27	9.60
3655816	$57.39	75	3.9	1	22.6%	12.97	4.6	$50.03	75	14.4	1	22.6%	10.72	3.70
3655882	$32.82	105	7.2	1	46.6%	25.66	19.3	$21.22	85	15.5	1	46.6%	14.93	36.90
3655937	$229.87	75	4.0	1	5.2%	15.13	0.9	$208.29	75	14.6	1	5.2%	12.41	1.85
3655948	$37.84	95	6.2	1	44.3%	26.75	14.4	$28.45	75	13.7	1	44.3%	14.71	13.40
3655992	$28.21	105	7.6	3	44.5%	25.81	11.2	$13.91	95	20.1	4	44.5%	17.93	30.40
3656011	$36.87	105	7.1	1	44.9%	25.81	20.8	$25.11	75	12.0	1	44.9%	12.32	34.10
3656088	$29.44	105	7.3	1	46.9%	23.48	16.9	$21.69	75	13.5	1	46.9%	11.31	17.00
3656110	$42.80	75	3.9	1	35.0%	14.88	6.2	$37.74	75	14.3	1	35.0%	12.27	5.30
3656132	$34.02	105	7.2	1	45.9%	28.5	17.5	$24.48	75	13.4	1	45.9%	13.44	17.10
3656187	$30.99	105	7.5	1	46.3%	29.02	13.8	$17.17	75	13.4	1	46.3%	13.67	26.10
3656212	$142.66	75	3.9	1	9.2%	15.07	2.8	$120.04	75	14.3	1	9.2%	12.38	1.70
3656231	$70.30	75	3.7	1	24.1%	14.02	8.2	$62.44	75	13.8	1	24.1%	11.56	7.40
3656291	$153.44	75	3.8	1	10.2%	15.06	5.1	$133.99	75	13.9	1	10.2%	12.38	4.50
3656341	$66.52	75	3.9	1	21.8%	15	5.2	$57.16	75	14.3	1	21.8%	12.36	4.00
3656660	$29.00	105	7.5	5	45.0%	25.81	12.8	$15.36	85	16.8	5	45.0%	15.03	29.50
3656770	$198.01	75	4.0	1	6.3%	15.1	1.7	$164.47	75	14.4	1	6.3%	12.39	0.70
3656781	$65.19	75	3.6	1	29.9%	14.15	11.7	$56.81	75	13.6	1	29.9%	11.67	9.90
3656814	$33.12	105	7.3	1	44.3%	25.81	17.1	$22.76	75	13.0	1	44.3%	12.32	23.80
3656869	$31.17	105	7.3	1	45.0%	25.81	15.2	$19.78	75	13.1	1	45.0%	12.32	24.20
3656902	$30.56	105	7.4	8	44.0%	25.82	13.6	$16.81	95	19.2	8	44.0%	17.93	37.40
3656968	$45.40	85	4.7	1	45.9%	18.3	18.8	$35.84	75	13.0	1	45.9%	12.33	16.80
3656979	$29.31	105	7.5	9	43.6%	25.82	11.9	$15.24	95	19.8	9	43.6%	17.93	32.50
3657177	$27.65	105	7.4	2	46.6%	21.36	16.2	$16.92	95	18.9	2	46.6%	14.96	44.20
3657243	$28.90	105	7.5	2	48.5%	27.24	14.6	$16.77	75	13.2	2	48.5%	12.84	27.50
3657287	$70.31	75	3.9	1	19.3%	14.77	3.9	$60.28	75	14.4	1	19.3%	12.16	3.00
3657364	$30.60	105	7.3	1	45.8%	25.81	15.2	$21.16	75	13.5	1	45.8%	12.32	18.20
3657518	$27.94	105	7.4	1	45.4%	20.48	16.4	$21.47	75	13.7	1	45.4%	10.01	15.40
3657551	$35.93	85	5.1	1	42.0%	18.3	9.8	$28.78	75	14.1	1	42.0%	12.33	8.20
3657639	$35.34	85	5.1	1	43.9%	18.3	10.8	$28.63	75	14.1	1	43.9%	12.33	9.20
3657650	$59.36	75	3.9	1	28.1%	16	6.5	$48.56	75	14.2	1	28.1%	13.18	5.10
3657661	$28.44	105	7.4	1	46.5%	23.34	15.5	$20.49	75	13.7	1	46.5%	11.25	17.40
3657749	$30.08	105	7.5	1	43.9%	25.82	13.2	$18.43	75	13.8	1	43.9%	12.32	18.30
3657782	$121.46	75	3.9	1	10.7%	15.05	2.6	$103.93	75	14.4	1	10.7%	12.38	1.90
3657804	$148.71	75	3.9	1	9.3%	16.48	2.6	$125.12	75	14.4	1	9.3%	13.51	1.60
3657815	$71.89	75	3.9	1	20.9%	16.11	4.9	$61.51	75	14.2	1	20.9%	13.26	3.70
3657980	$34.59	105	7.2	1	44.4%	25.85	19.2	$25.90	75	13.3	1	44.4%	12.32	18.30
3658057	$66.20	75	3.6	1	31.9%	15.65	12.5	$57.81	75	13.4	1	31.9%	12.89	10.60
3658145	$39.10	95	5.9	1	44.5%	21.93	19.4	$30.55	75	13.1	1	44.5%	12.33	19.60
3658189	$59.21	75	3.8	1	26.8%	12.84	7.9	$51.08	75	14.0	1	26.8%	10.61	6.40
3658354	$31.35	105	7.4	1	46.3%	31	12	$20.83	75	14.0	1	46.3%	14.61	11.80
3658409	$26.30	105	7.6	5	44.7%	25.81	9.7	$12.88	95	20.3	5	44.7%	17.94	26.40
3658442	$27.53	105	7.6	16	45.0%	25.81	10.5	$13.48	95	20.0	16	45.0%	17.94	28.80
3658475	$31.61	95	6.3	1	42.5%	21.94	10.2	$24.03	75	14.1	1	42.5%	12.33	9.30

3658486	$32.22	75	4.0	1	44.4%	14.94	5.4	$25.64	75	14.5	1	44.4%	12.33	4.90
3658541	$47.10	75	3.6	1	44.9%	14.95	13.8	$40.33	75	13.6	1	44.9%	12.34	12.40
3658574	$25.63	105	7.6	12	45.7%	25.81	9.3	$12.54	95	20.1	12	45.7%	17.94	25.70
3658601	$39.52	85	4.8	1	45.2%	18.3	14.3	$32.27	75	13.3	1	45.2%	12.33	12.30
3658684	$42.69	75	3.8	1	43.3%	14.95	10.2	$37.15	75	14.0	1	43.3%	12.34	8.40
3658728	$29.77	105	7.5	3	44.3%	25.81	13	$15.97	95	19.5	3	44.3%	17.93	35.60
3658739	$251.36	75	4.0	1	4.7%	15.13	0.5	$231.52	75	14.7	1	4.7%	12.41	1.86
3658794	$58.34	75	3.4	1	45.4%	14.95	18.9	$50.32	75	12.9	1	45.4%	12.34	17.20
3658937	$65.09	75	4.0	1	19.1%	13.55	3.2	$55.49	75	14.5	1	19.1%	11.18	2.20
3658992	$33.72	105	7.2	1	45.0%	25.81	18.7	$22.21	85	15.7	1	45.0%	15.02	33.20
3659157	$35.16	75	3.9	1	44.9%	14.94	7.7	$27.51	75	14.2	1	40.9%	12.33	7.70
3659212	$44.87	75	3.7	1	41.9%	13.12	12.1	$39.38	75	13.8	1	41.9%	10.86	10.20
3659245	$32.98	85	5.1	1	46.9%	18.19	10.9	$25.62	75	14.0	1	46.9%	12.26	10.90
3659311	$32.39	105	7.3	1	44.0%	25.82	16	$20.00	85	16.0	1	44.0%	15.02	33.90
3659322	$70.88	75	3.8	1	22.9%	15.49	6	$62.32	75	14.1	1	22.9%	12.75	5.30
3659333	$29.50	105	7.5	1	44.8%	25.81	13	$19.41	75	13.8	1	44.8%	12.32	16.00
3659355	$31.30	105	7.4	3	45.5%	25.81	16.1	$18.63	95	18.7	3	45.5%	17.93	44.10
3659377	$29.95	105	7.4	3	45.5%	25.81	14.4	$16.71	95	19.2	3	45.5%	17.93	39.40
3659388	$28.63	105	7.5	5	44.0%	25.82	11.2	$14.29	95	19.9	5	44.0%	17.94	30.80
3659454	$44.46	75	3.9	1	36.8%	14.97	7	$37.31	75	14.2	1	36.8%	12.34	6.00
3659498	$29.59	75	3.9	1	47.4%	11.03	8.2	$25.15	75	14.1	1	47.4%	9.15	8.00
3659520	$28.12	105	7.6	8	44.6%	25.81	11.1	$13.85	95	20.0	8	44.6%	17.93	30.10
3659531	$27.26	105	7.6	1	44.2%	25.81	10.6	$16.01	75	14.0	1	44.2%	12.32	16.60
3659564	$31.86	105	7.3	2	45.9%	25.81	17.2	$19.67	85	15.5	2	45.9%	15.01	39.80
3659619	$90.91	75	3.6	1	20.9%	15.01	9.7	$81.20	75	13.5	1	20.9%	12.36	9.00
3659641	$26.97	105	7.6	16	44.0%	25.82	10.1	$13.28	95	20.2	16	44.0%	17.93	27.40
3659708	$53.17	75	3.7	1	33.6%	12.72	10.7	$46.28	75	13.7	1	33.6%	10.51	8.90
3659740	$79.78	75	3.6	1	26.2%	18.43	9.5	$70.61	75	13.6	1	26.2%	15.12	8.80
3659831	$110.22	75	3.0	1	34.2%	19.43	24.2	$94.03	75	11.9	1	34.2%	15.93	21.20
3659883	$72.72	75	4.0	1	17.5%	15.02	2.5	$62.04	75	14.6	1	17.5%	12.36	1.70
3659960	$30.28	105	7.3	1	47.0%	25.81	15.9	$19.95	75	13.1	1	47.0%	12.32	23.90
3659993	$45.30	75	3.8	1	46.4%	19.24	10.3	$38.31	75	13.9	1	46.4%	15.79	9.00
3660103	$32.71	105	7.3	2	44.5%	25.81	16.8	$20.13	85	15.4	2	44.5%	15.01	39.10
3660411	$33.52	105	7.3	1	43.7%	25.85	17.2	$24.74	75	13.6	1	43.7%	12.32	16.30
3660422	$40.25	105	6.9	1	46.2%	25.81	26.6	$28.02	85	13.8	1	46.2%	15.02	54.90
3660576	$36.96	95	5.9	1	47.0%	19.98	19.8	$29.14	75	13.1	1	47.0%	11.31	18.80
3660598	$39.44	95	5.9	1	47.2%	21.93	21	$30.68	75	13.0	1	47.2%	12.33	20.20
3660609	$32.44	95	6.1	1	43.5%	17.09	16	$26.52	75	13.5	1	43.5%	9.81	15.10
3660675	$29.39	105	7.4	1	44.4%	23.97	14.2	$17.32	85	16.5	1	44.4%	14.02	26.50
3660829	$67.17	75	3.9	1	23.6%	17.41	5.2	$58.28	75	14.3	1	23.6%	14.30	4.40
3660884	$88.27	75	3.7	1	20.7%	15.01	8.9	$78.62	75	13.7	1	20.7%	12.36	8.20
3660895	$30.55	105	7.4	1	44.1%	25.82	13.7	$19.68	75	13.6	1	44.1%	12.32	18.00
3660983	$30.57	105	7.4	2	44.1%	25.82	13.7	$16.92	95	19.1	2	44.1%	17.91	37.70
3661016	$59.36	75	3.7	1	31.0%	14.98	9.5	$51.51	75	13.8	1	31.0%	12.35	7.90
3661115	$56.45	75	3.9	1	24.6%	14.99	4.4	$48.29	75	14.4	1	24.6%	12.35	3.20
3661142	$33.11	105	7.2	2	45.6%	25.81	18.4	$21.12	95	18.3	2	45.6%	17.92	42.10
3661148	$28.11	105	7.5	4	44.0%	22.6	13.5	$15.83	95	19.5	4	44.0%	15.80	37.00
3661236	$93.63	75	4.0	1	14.6%	16.53	2.7	$79.54	75	14.5	1	14.6%	13.58	1.70
3661346	$28.89	105	7.5	2	44.1%	25.81	11.4	$15.18	85	16.5	2	44.1%	15.01	26.80
3661368	$43.42	75	3.9	1	38.0%	14.96	7.2	$35.81	75	14.2	1	38.0%	12.34	5.70
3661434	$48.17	75	3.9	1	26.2%	11.28	5.6	$41.70	75	14.3	1	26.2%	9.35	4.30
3661489	$36.59	85	5.0	1	47.6%	21.08	12	$29.05	75	13.9	1	47.6%	14.09	10.60
3661588	$48.46	75	3.7	1	43.7%	16.45	12.5	$42.49	75	13.7	1	43.7%	13.55	10.60
3661665	$31.81	105	7.3	7	45.5%	25.81	16.8	$19.14	95	18.6	7	45.5%	17.93	45.80
3661797	$46.51	75	3.8	1	37.8%	14.97	9	$40.63	75	14.1	1	37.8%	12.34	7.50
3661874	$49.03	75	3.6	1	38.6%	12.59	12.4	$44.38	75	13.6	1	38.6%	10.42	11.40
3661973	$31.31	105	7.3	7	45.8%	25.81	16.2	$18.92	95	18.4	7	45.8%	17.93	44.70

3662061	$54.07	75	3.9	1	26.2%	13.66	5.9	$46.61	75	14.2	1	26.2%	11.28	4.60
3662066	$32.79	105	7.2	1	45.1%	25.81	17	$22.69	75	12.8	1	45.1%	12.32	24.10
3663000	$29.37	105	7.6	113	46.6%	31.65	10.5	$13.80	95	20.4	113	46.6%	21.92	28.90
3663132	$35.17	105	7.1	1	47.0%	24.78	21.9	$23.59	85	14.8	1	47.0%	14.46	43.10
3663264	$28.66	105	7.5	9	45.0%	25.81	12.4	$14.54	95	20.0	9	45.0%	17.94	33.40
3663319	$29.93	105	7.4	7	45.5%	25.81	14.3	$16.65	95	19.2	7	45.5%	17.93	39.20
3663330	$169.58	75	4.0	1	7.0%	15.09	1	$141.97	75	14.6	1	7.0%	12.39	0.10
3663418	$30.34	105	7.3	20	46.2%	23.84	17	$19.08	95	18.3	20	46.2%	16.63	46.80
3663429	$83.79	75	3.9	1	15.6%	14.18	3.7	$71.69	75	14.4	1	15.6%	11.69	2.60
3663473	$30.18	105	7.4	9	44.9%	25.81	14.1	$16.77	95	19.2	9	44.9%	17.93	38.70
3663506	$26.97	105	7.6	6	44.8%	25.81	10.9	$13.54	95	20.3	6	44.8%	17.94	29.50
3663583	$48.77	75	3.8	1	33.6%	13.52	8.1	$43.52	75	14.0	1	33.6%	11.17	7.20
3663742	$38.98	95	6.0	1	44.1%	24.11	17.2	$28.82	75	13.3	1	44.1%	13.45	18.10
3663770	$30.21	105	7.4	1	45.1%	25.83	14.4	$20.92	75	13.9	1	45.1%	12.32	14.40
3663792	$33.16	85	5.1	1	45.3%	18.29	9.7	$25.30	75	14.0	1	45.3%	12.33	9.90
3663803	$36.81	85	5.0	1	44.5%	18.3	12.3	$28.93	75	13.8	1	44.5%	12.33	11.30
3663814	$28.29	105	7.5	3	44.8%	25.81	11.4	$14.60	95	19.8	3	44.8%	17.93	31.30
3663924	$27.76	105	7.5	13	44.9%	24.51	12	$14.84	95	19.7	13	44.9%	17.08	33.30
3663957	$50.15	75	3.8	1	32.6%	12.83	8.6	$44.66	75	14.0	1	32.6%	10.61	7.70
3663979	$29.74	105	7.4	1	45.4%	25.81	13.8	$18.18	75	13.4	1	45.4%	12.32	23.10
3664155	$65.41	75	3.9	1	20.6%	14.16	4.3	$56.72	75	14.3	1	20.6%	11.68	3.40
3664199	$46.97	75	3.9	1	30.0%	13.65	6	$40.79	75	14.3	1	30.0%	11.27	4.70
3664232	$37.94	75	4.0	1	37.9%	14.96	5.4	$32.80	75	14.5	1	37.9%	12.34	4.10
3664309	$29.68	105	7.5	9	43.6%	25.82	12.2	$15.74	95	19.5	9	43.6%	17.93	33.60
3664408	$34.15	105	7.2	1	45.2%	25.84	19.4	$25.66	75	13.3	1	45.2%	12.32	18.50
3664430	$35.07	75	3.9	1	44.0%	14.94	7.1	$30.09	75	14.3	1	44.0%	12.33	5.90
3664441	$52.89	75	4.0	1	24.0%	14.99	2.6	$45.12	75	14.7	1	24.0%	12.35	1.60
3664452	$47.21	95	5.7	1	43.6%	21.95	25.1	$37.43	75	12.6	1	43.6%	12.33	22.30
3664485	$30.64	105	7.4	2	46.1%	25.81	15.9	$17.63	95	18.9	2	46.1%	17.91	43.10
3664551	$35.52	85	4.9	1	40.0%	12.74	12.4	$30.71	75	13.5	1	40.0%	8.75	11.60
3664584	$28.77	105	7.5	8	45.1%	25.81	12.2	$15.30	95	19.5	8	45.1%	17.93	33.60
3664639	$29.92	95	6.3	1	45.2%	21.07	11.2	$21.73	75	14.0	1	45.2%	11.89	11.40
3664716	$55.11	75	3.8	1	30.9%	14.97	7.7	$47.74	75	14.0	1	30.9%	12.35	6.30
3664749	$27.34	105	7.4	4	48.4%	22.36	16.1	$17.09	95	18.6	4	48.4%	15.65	44.00
3664771	$40.03	85	4.9	1	42.5%	18.31	13.5	$32.57	75	13.7	1	42.5%	12.33	11.70
3664842	$28.09	105	7.6	5	45.0%	25.81	11.5	$13.97	95	20.1	5	45.0%	17.94	31.30
3664859	$78.76	75	3.9	1	17.7%	15.02	4.2	$67.63	75	14.3	1	17.7%	12.36	3.30
3664892	$103.88	75	3.9	1	12.5%	15.04	2.7	$89.02	75	14.4	1	12.5%	12.37	2.00
3664958	$37.23	85	4.9	1	46.2%	17.61	14.5	$30.53	75	13.6	1	46.2%	11.89	12.50
3665024	$57.39	75	3.7	1	32.4%	14.81	10	$50.03	75	13.8	1	32.4%	12.22	8.30
3665035	$36.74	105	7.1	1	44.5%	25.81	20.3	$24.20	85	15.1	1	44.5%	15.02	38.10
3665068	$49.87	75	3.9	1	30.7%	14.97	6.6	$42.90	75	14.2	1	30.7%	12.35	5.20
3665233	$24.96	105	7.6	5	48.6%	25.8	9.6	$12.10	95	20.0	5	48.6%	17.96	26.60
3665255	$25.91	105	7.5	21	44.7%	20.34	12.8	$15.12	95	19.2	21	44.7%	14.30	35.70
3665288	$30.47	105	7.5	2	43.9%	26.12	13.4	$16.97	85	16.4	2	43.9%	15.17	31.00
3665310	$28.85	105	7.5	1	44.1%	26.28	11.1	$17.12	75	13.9	1	44.1%	12.51	15.50
3665332	$70.32	75	3.8	1	25.7%	15.92	8.4	$60.76	75	14.0	1	25.7%	13.11	6.90
3665354	$44.05	75	3.7	1	36.6%	10.76	10	$39.80	75	13.9	1	36.6%	8.93	9.00
3665409	$29.92	105	7.4	8	44.8%	25.81	13.7	$16.43	95	19.3	8	44.8%	17.93	37.60
3665475	$58.19	75	3.9	1	24.9%	12.29	6.5	$47.80	75	14.2	1	24.9%	10.16	5.20
3665508	$25.14	105	7.6	35	45.0%	23.58	10.5	$12.85	95	20.3	35	45.0%	16.47	28.50
3665519	$70.66	75	3.9	1	22.1%	15.24	5.3	$58.84	75	14.2	1	22.1%	12.55	4.60
3665585	$41.65	75	3.8	1	45.0%	15.88	9.9	$34.52	75	14.0	1	45.0%	13.09	9.20
3665640	$35.44	105	7.1	1	45.9%	25.81	20.2	$25.09	75	12.7	1	45.9%	12.32	26.80
3665750	$31.73	95	6.3	1	43.8%	21.93	11.5	$23.66	75	14.1	1	43.8%	12.33	10.90
3665761	$50.61	75	3.8	1	36.2%	16.27	8.6	$44.72	75	14.0	1	36.2%	13.39	7.60
3665882	$30.38	105	7.4	4	44.6%	25.81	14	$16.96	95	19.1	4	44.6%	17.93	38.60

3665893	$25.99	105	7.6	4	44.7%	23.71	11.3	$13.64	95	20.1	4	44.7%	16.55	31.00
3665926	$155.35	75	4.0	1	7.4%	13.88	1.4	$130.81	75	14.6	1	7.4%	11.43	0.50
3665948	$49.94	75	3.7	1	38.9%	14.97	11.3	$43.85	75	13.8	1	38.9%	12.34	9.50
3665959	$34.76	95	6.2	1	46.8%	24.4	15.2	$25.14	75	13.7	1	46.8%	13.60	16.10
3666047	$27.95	105	7.6	3	44.9%	25.81	11.1	$13.85	95	20.0	3	44.9%	17.91	30.10
3666058	$28.33	105	7.6	7	45.0%	25.81	11.9	$14.24	95	20.0	7	45.0%	17.94	32.30
3666102	$27.42	105	7.6	2	44.8%	25.81	10.2	$13.32	95	20.1	2	44.8%	17.91	28.00
3666212	$28.74	105	7.5	9	45.2%	25.81	12.5	$15.24	95	19.7	9	45.2%	17.94	34.30
3666322	$28.32	105	7.4	3	46.5%	21.91	16.6	$17.69	95	18.8	3	46.5%	15.33	45.10
3666366	$32.02	105	7.3	1	46.4%	25.38	18.3	$23.90	75	13.5	1	46.4%	12.13	17.50
3666481	$31.88	105	7.3	8	45.2%	25.81	16.6	$19.30	95	18.5	8	45.2%	17.93	45.70
3666663	$60.85	75	3.7	1	31.7%	15.91	10	$52.93	75	13.8	1	31.7%	13.10	8.30
3666828	$36.62	105	7.1	1	45.9%	25.81	22	$24.67	85	15.1	1	45.9%	15.02	39.90
3666850	$39.42	105	7.0	2	45.9%	25.81	25.4	$26.65	95	16.6	2	45.9%	17.91	62.80
3666872	$29.47	105	7.5	1	44.8%	25.81	13	$18.58	75	13.7	1	44.8%	12.32	17.40
3666883	$33.72	85	5.0	1	46.9%	17.89	11.7	$26.63	75	13.9	1	46.9%	12.07	10.70
3666949	$53.30	75	3.8	1	29.7%	13.33	7.4	$46.29	75	14.1	1	29.7%	11.01	6.00
3666993	$34.93	105	7.4	1	46.0%	33.28	15.1	$19.69	85	16.3	1	46.0%	18.99	28.80
3667048	$34.12	105	7.2	2	46.0%	25.81	20.1	$22.52	95	18.1	2	46.0%	17.92	43.80
3667070	$29.83	105	7.4	14	45.5%	25.81	14.1	$16.60	95	19.2	14	45.5%	17.93	38.80
3667081	$40.84	105	7.0	1	44.0%	27.7	23.2	$31.18	75	12.7	1	44.0%	13.08	22.40
3667191	$50.33	75	3.9	1	33.0%	14.97	7.3	$42.46	75	14.2	1	33.0%	12.35	6.40
3667257	$31.19	85	5.1	1	46.7%	16.72	10.3	$25.41	75	14.1	1	46.7%	11.32	8.70
3667279	$33.59	105	7.2	1	44.5%	25.81	17.7	$24.05	75	12.9	1	44.5%	12.32	23.20
3667334	$29.32	105	7.5	2	47.0%	28.18	12.6	$15.53	95	19.4	2	47.0%	19.43	35.10
3667411	$25.12	105	7.5	1	47.3%	20.24	14	$15.73	75	13.2	1	47.3%	9.91	26.60
3667466	$43.76	75	3.9	1	37.4%	14.49	7.4	$36.97	75	14.2	1	37.4%	11.96	6.50
3667488	$61.89	75	3.8	1	28.6%	15.06	8.6	$53.66	75	13.9	1	28.6%	12.41	7.10
3667510	$26.65	105	7.5	1	47.7%	24.92	12.3	$15.11	75	13.4	1	47.7%	11.93	23.30
3667638	$30.27	105	7.5	3	43.3%	25.82	12.8	$16.06	95	19.6	3	43.3%	17.91	34.80
3667686	$23.25	105	7.6	2	47.4%	21.68	11.2	$12.80	85	17.1	2	47.4%	12.77	25.70
3667708	$32.42	105	7.4	1	44.1%	25.82	16.3	$20.72	75	13.0	1	44.1%	12.32	29.30
3667730	$31.52	105	7.3	1	46.4%	25.07	17.8	$21.13	75	12.8	1	46.4%	12.00	31.00
3667851	$29.13	105	7.5	16	44.9%	25.81	12.5	$15.67	95	19.4	16	44.9%	17.93	34.60
3668088	$100.99	75	3.8	1	17.5%	17.66	6.1	$87.79	75	14.0	1	17.5%	14.49	5.40
3668099	$137.71	75	4.0	1	8.6%	14.91	1.1	$115.50	75	14.7	1	8.6%	12.25	0.20
3668209	$33.07	105	7.4	1	47.0%	32.11	14.4	$22.92	75	13.9	1	47.0%	14.98	13.60
3668242	$35.16	105	7.3	1	46.7%	32.81	16.4	$23.41	75	13.6	1	46.7%	15.27	17.00
3668286	$30.26	105	7.5	3	46.6%	28.67	13.5	$15.89	95	19.7	3	46.6%	19.80	36.90
3668374	$28.12	105	7.5	4	45.6%	25.81	12	$14.69	95	19.9	4	45.6%	17.94	32.90
3668462	$34.49	105	7.2	3	46.2%	25.81	21	$22.93	95	17.6	3	46.2%	17.93	56.30
3668610	$34.55	105	7.2	1	44.9%	25.81	19.8	$23.34	75	12.6	1	44.9%	12.32	31.40
3668847	$33.06	75	3.9	1	45.6%	13.3	8	$26.02	75	14.2	1	45.6%	11.00	8.10
3668891	$42.98	75	3.8	1	38.2%	13.57	8.2	$38.37	75	14.1	1	38.2%	11.22	7.30
3668968	$34.37	105	7.2	1	46.4%	24.93	20.1	$22.58	75	12.2	1	46.4%	11.93	33.60
3669001	$26.08	105	7.6	9	44.8%	25.81	9.5	$12.63	95	20.4	9	44.8%	17.94	25.70
3669023	$28.22	85	5.3	1	44.9%	18.3	6.4	$21.44	75	14.6	1	44.9%	12.33	5.80
3669078	$29.79	105	7.5	2	44.5%	25.81	13.3	$16.64	85	16.6	2	44.5%	15.01	28.00
3669188	$28.53	105	7.5	1	44.9%	25.81	12.1	$16.72	75	13.9	1	44.9%	12.32	18.90
3669199	$27.22	105	7.2	1	47.7%	19.77	17.3	$18.59	95	18.7	1	47.7%	13.91	34.70
3669254	$28.41	105	7.5	6	44.9%	25.81	11.6	$14.82	95	19.7	6	44.9%	17.93	31.90
3669364	$127.73	75	4.0	1	9.0%	12.91	2.2	$107.96	75	14.5	1	9.0%	10.64	1.20
3669386	$27.85	105	7.3	2	47.3%	19.41	18.4	$18.91	95	18.0	2	47.3%	13.67	49.90
3669441	$29.26	105	7.5	1	43.9%	25.82	11.9	$17.74	75	13.9	1	43.9%	12.32	16.00
3669452	$33.18	105	7.2	6	45.9%	25.81	18.8	$21.06	95	17.9	6	45.9%	17.93	51.40
3669606	$26.90	105	7.4	4	46.5%	19.06	17	$17.72	95	18.6	4	46.5%	13.44	46.50
3669892	$27.31	105	7.6	2	44.7%	25.81	11.4	$14.15	95	20.3	2	44.7%	17.91	28.80

3670035	$29.47	105	7.5	2	44.1%	25.81	12.3	$15.77	95	19.4	2	44.1%	17.91	34.20
3670068	$31.50	95	6.3	1	43.6%	21.93	11	$24.02	75	14.1	1	43.6%	12.33	10.00
3670123	$50.19	105	6.3	1	50.1%	25.84	37.3	$43.89	105	17.5	1	50.1%	21.05	34.50
3670167	$38.04	75	3.8	1	44.9%	11.69	11	$33.47	75	13.9	1	44.9%	9.69	9.20
3670189	$34.26	105	7.4	2	47.0%	35.04	13.6	$17.93	75	13.3	2	47.0%	16.19	26.00
3670387	$31.38	105	7.3	7	46.4%	25.81	17	$19.18	95	18.4	7	46.4%	17.93	46.60
3670420	$27.47	105	7.6	6	44.6%	25.81	11.6	$14.05	95	20.2	6	44.6%	17.93	31.50
3670442	$27.49	105	7.4	2	48.2%	24.5	14.2	$15.71	95	19.0	2	48.2%	17.06	39.10
3670477	$58.91	75	3.9	1	25.6%	13.27	6.3	$48.01	75	14.2	1	25.6%	10.97	5.00
3670552	$66.80	75	3.8	1	26.1%	14.99	8.3	$57.83	75	14.0	1	26.1%	12.35	6.80
3670618	$30.74	95	6.2	1	48.8%	22.04	13.9	$23.77	75	13.8	1	48.8%	12.38	13.10
3670717	$41.03	75	3.6	1	47.8%	12.36	13.7	$36.19	75	13.6	1	47.8%	10.23	11.70
3671267	$27.82	95	6.4	1	44.9%	21.93	9.2	$20.33	75	14.4	1	44.9%	12.33	8.30
3671322	$31.36	95	6.2	1	42.7%	17.98	13.8	$25.05	75	13.9	1	42.7%	10.27	12.80
3671597	$45.41	105	6.9	1	39.5%	27.39	22.7	$36.05	75	12.5	1	39.5%	12.94	24.00
3671608	$31.05	105	7.4	7	45.3%	25.81	15.5	$17.87	95	18.8	7	45.3%	17.93	42.60
3671620	$28.78	105	7.4	1	44.9%	25.81	11.3	$19.27	75	13.5	1	44.9%	12.32	13.80
3671663	$30.87	105	7.4	6	44.2%	25.81	14.3	$17.24	95	19.1	6	44.2%	17.93	39.30
3671718	$36.09	95	6.1	1	43.8%	21.92	16	$26.93	75	13.4	1	43.8%	12.33	16.90
3671817	$56.33	75	3.8	1	29.8%	13.46	8.6	$48.82	75	13.9	1	29.8%	11.12	7.00
3671894	$29.38	105	7.5	3	44.2%	25.81	12.6	$15.34	95	19.9	3	44.2%	17.93	34.00
3672246	$28.76	85	5.1	1	47.3%	14.55	10.3	$23.85	75	14.2	1	47.3%	9.93	8.80
3672327	$81.41	75	3.9	1	15.8%	15.02	2.3	$68.70	75	14.4	1	15.8%	12.36	1.30
3672521	$32.11	105	7.4	1	45.2%	28.01	15.2	$23.04	75	13.8	1	45.2%	13.22	14.30
3672554	$27.80	105	7.5	11	45.0%	25.81	10.9	$14.20	95	19.9	11	45.0%	17.94	30.00
3673000	$26.70	105	7.6	74	46.3%	26.75	10.7	$13.23	95	20.2	74	46.3%	18.57	29.10
3673143	$35.99	95	6.2	1	46.5%	27.25	13.8	$27.01	75	13.8	1	46.5%	14.99	12.80
3673154	$30.65	105	7.4	3	43.9%	25.82	13.6	$16.91	95	19.1	3	43.9%	17.93	37.60
3673176	$31.43	105	7.4	4	43.5%	25.82	14.4	$17.54	95	19.1	4	43.5%	17.93	39.40
3673352	$29.56	105	7.4	5	45.5%	25.81	13.8	$16.30	95	19.3	5	45.5%	17.93	38.00
3673517	$38.34	75	3.8	1	46.1%	14.94	9.1	$31.65	75	14.0	1	46.1%	12.33	8.40
3673583	$30.58	105	7.4	2	44.6%	25.81	14.4	$17.50	95	19.5	2	44.6%	17.91	32.70
3673605	$27.72	105	7.6	1	44.9%	25.81	10.8	$16.72	75	14.1	1	44.9%	12.32	14.00
3673715	$29.95	105	7.4	1	44.5%	25.81	13.4	$17.25	75	13.3	1	44.5%	12.31	25.60
3673726	$71.03	75	3.9	1	19.5%	15.01	4.2	$61.71	75	14.3	1	19.5%	12.36	3.40
3673737	$125.15	75	4.0	1	9.8%	15.06	1.6	$105.86	75	14.5	1	9.8%	12.38	0.80
3673880	$30.18	105	7.4	3	45.0%	25.81	14	$16.95	95	19.0	3	45.0%	17.91	38.80
3673902	$36.52	105	7.2	1	44.1%	28.5	18.9	$26.55	75	13.3	1	44.1%	13.45	18.20
3674017	$44.51	75	3.9	1	36.9%	14.97	7.2	$36.70	75	14.2	1	36.9%	12.34	5.70
3674023	$36.00	85	5.0	1	43.8%	18.3	11.1	$28.24	75	13.9	1	43.8%	12.33	11.20
3674166	$25.84	105	7.5	9	47.6%	24.5	11.5	$13.23	95	20.0	9	47.6%	17.09	31.70
3674183	$25.05	105	7.6	34	47.6%	23.32	11.5	$12.92	95	20.1	34	47.6%	16.30	31.50
3675121	$24.90	105	7.4	1	47.6%	17.2	16.6	$17.58	85	16.1	1	47.6%	10.32	29.30
3675341	$37.37	85	4.9	1	45.0%	16.88	14.3	$29.87	75	13.5	1	40.7%	11.43	15.20
3675484	$25.99	105	7.6	23	44.4%	21.68	11.7	$13.77	95	19.9	23	44.4%	15.20	32.20
3675506	$31.08	105	7.3	1	44.9%	22.17	18.4	$23.86	75	13.4	1	44.9%	10.74	17.50
3675572	$39.50	105	7.0	1	46.0%	25.81	25.4	$29.11	85	15.2	1	46.0%	15.02	33.30
3675583	$27.56	105	7.6	2	44.2%	25.81	11.3	$14.60	85	17.1	2	44.2%	15.01	23.90
3675627	$38.95	75	3.9	1	38.4%	13.84	7.1	$34.45	75	14.2	1	38.4%	11.43	6.10
3675671	$26.38	105	7.5	2	48.6%	25.8	11.8	$13.99	95	19.6	2	48.6%	17.92	32.60
3675682	$84.02	75	4.0	1	15.8%	15.02	3.1	$71.30	75	14.5	1	15.8%	12.36	2.10
3675726	$195.92	75	4.0	1	5.8%	14.48	0.6	$39.22	75	13.5	1	39.2%	14.11	12.80
3675803	$71.88	75	3.1	1	45.0%	14.97	23.9	$66.41	75	12.2	1	45.0%	12.35	23.20
3676001	$36.36	95	6.2	1	43.4%	25.87	12.7	$27.44	75	13.9	1	43.4%	14.35	11.80
3676089	$26.91	105	7.6	9	44.9%	25.81	10.9	$13.54	95	20.2	9	44.9%	17.94	29.50
3676155	$37.90	85	4.9	1	38.6%	13.71	12.7	$32.47	75	13.6	1	38.6%	9.38	11.80
3676210	$81.62	75	3.9	1	17.1%	15.02	4.2	$70.38	75	14.4	1	17.1%	12.36	3.40

3676280	$41.23	75	3.6	1	46.8%	12.81	12.5	$35.83	75	13.5	1	46.8%	10.60	10.80
3676287	$26.68	105	7.6	1	44.6%	25.81	10.3	$14.25	75	14.0	1	44.6%	12.31	19.10
3676331	$39.52	105	7.0	1	44.7%	25.82	23.8	$28.86	75	12.3	1	44.7%	12.32	27.10
3676386	$29.98	105	7.5	1	43.5%	25.82	12.3	$17.68	75	13.6	1	43.5%	12.32	18.90
3676540	$27.98	105	7.5	35	45.5%	25.96	11.5	$14.44	95	19.9	35	45.5%	18.05	31.50
3676584	$30.70	105	7.4	1	44.0%	25.82	14	$19.71	75	13.7	1	44.0%	12.32	18.30
3676617	$29.93	105	7.4	1	44.3%	25.84	13	$21.02	75	13.9	1	44.3%	12.32	12.70
3676639	$29.47	105	7.5	1	44.4%	25.81	12.6	$16.37	85	16.7	1	44.4%	15.02	23.60
3676661	$29.64	105	7.5	5	44.0%	25.82	12.4	$15.84	95	19.4	5	44.0%	17.93	34.30
3676672	$74.32	75	3.9	1	18.6%	15.01	4.2	$64.11	75	14.4	1	18.6%	12.36	3.40
3676705	$26.92	105	7.6	14	44.8%	25.81	10.9	$13.42	95	20.4	14	44.8%	17.94	29.30
3676881	$62.18	75	3.8	1	21.8%	9.85	6.5	$54.17	75	14.1	1	21.8%	8.25	5.20
3677112	$41.25	75	3.8	1	46.2%	17.89	8.7	$32.90	75	14.1	1	46.2%	14.72	8.30
3677167	$47.67	75	3.6	1	46.0%	16.53	13.5	$40.01	75	13.5	1	46.0%	13.61	12.50
3677211	$51.02	75	3.8	1	34.4%	14.97	8.6	$45.26	75	14.0	1	34.4%	12.35	7.60
3677376	$28.03	105	7.6	1	46.3%	27.4	11.1	$15.00	75	13.6	1	46.3%	12.92	21.10
3677431	$60.57	75	3.9	1	24.8%	14.99	6	$51.88	75	14.2	1	24.8%	12.35	4.60
3677513	$29.03	105	7.4	1	46.6%	23.97	15.9	$17.96	85	16.5	1	46.6%	14.02	27.50
3677519	$30.15	105	7.4	1	44.7%	25.82	13.6	$20.77	75	13.7	1	44.7%	12.32	15.30
3677574	$31.79	105	7.4	2	44.8%	25.81	16.1	$19.04	95	18.7	2	44.8%	17.91	43.80
3677684	$30.61	105	7.4	1	44.7%	26.44	13.9	$17.67	75	13.2	1	44.7%	12.57	26.50
3677772	$30.21	105	7.4	6	45.7%	25.81	14.6	$17.66	95	18.8	6	45.7%	17.93	40.50
3677783	$130.14	75	4.0	1	9.6%	15.48	1.5	$109.90	75	14.6	1	9.6%	12.71	0.70
3677805	$48.62	105	6.6	1	46.5%	25.84	34.8	$39.16	95	17.8	1	46.5%	17.94	34.50
3677849	$30.05	105	7.5	3	44.3%	25.81	13.5	$16.30	95	19.5	3	44.3%	17.92	36.90
3677948	$56.15	75	3.7	1	33.4%	13.45	11.3	$50.84	75	13.6	1	33.4%	11.12	10.50
3678003	$35.65	105	7.2	1	44.5%	25.81	20.5	$25.92	75	12.8	1	44.5%	12.32	26.90
3678036	$33.49	105	7.4	2	45.7%	31.66	14	$18.81	85	16.3	2	45.7%	18.14	30.60
3678063	$36.80	105	7.1	1	45.1%	25.81	21.3	$26.20	75	12.7	1	45.1%	12.32	28.10
3678113	$63.88	75	3.9	1	28.2%	20.83	5.6	$54.80	75	14.3	1	28.2%	17.06	4.30
3678124	$25.67	105	7.5	2	47.2%	22.96	12.4	$14.17	85	16.7	2	47.2%	13.46	28.80
3678146	$28.93	105	7.5	8	44.9%	25.81	12.6	$15.26	95	19.8	8	44.9%	17.93	34.30
3678168	$30.46	105	7.5	2	43.8%	25.82	13.7	$17.07	85	16.7	2	43.8%	15.02	28.30
3678289	$31.92	105	7.2	2	46.4%	25.81	17.4	$20.00	95	18.0	2	46.4%	17.91	47.90
3678333	$25.61	105	7.5	2	47.1%	23.08	11.9	$14.07	95	19.5	2	47.1%	16.11	33.00
3678355	$30.42	105	7.4	3	44.1%	25.82	13.7	$16.70	95	19.3	3	44.1%	17.92	37.70
3678421	$32.70	95	6.2	1	44.4%	21.93	12.6	$24.79	75	13.8	1	44.4%	12.33	12.10
3678454	$34.76	85	5.0	1	46.1%	20.31	9.9	$27.43	75	14.1	1	46.1%	13.61	8.60
3678465	$32.75	105	7.4	2	43.9%	25.82	16.6	$19.49	95	19.0	2	43.9%	17.92	38.00
3678487	$125.56	75	4.0	1	9.5%	14.98	1	$106.24	75	14.6	1	9.5%	12.32	0.30
3678520	$27.60	95	6.4	1	43.6%	18.97	10.8	$19.69	75	14.2	1	43.6%	10.79	11.20
3678553	$28.48	105	7.4	2	46.6%	23.2	15.7	$16.88	95	19.0	2	46.6%	16.19	42.90
3678575	$41.33	105	6.9	2	46.4%	25.81	28	$28.99	95	15.9	2	46.4%	17.91	68.20
3678608	$26.74	105	7.5	17	46.3%	25.81	10.4	$13.21	95	19.9	17	46.3%	17.94	28.80
3678663	$36.32	95	6.2	1	46.3%	29.46	12	$26.62	75	14.0	1	46.3%	16.21	11.00
3678674	$27.10	105	7.6	4	44.0%	22.47	12.4	$14.23	95	20.1	4	44.0%	15.73	33.60
3678696	$35.15	105	7.2	1	45.7%	29.02	18.4	$23.57	75	13.0	1	45.7%	13.68	23.90
3678806	$29.10	105	7.4	2	46.7%	24.64	15.3	$16.76	95	19.0	2	46.7%	17.15	41.70
3678850	$27.08	105	7.4	1	47.9%	22.74	15.2	$20.16	75	13.8	1	47.9%	10.99	14.50
3678960	$35.11	105	7.3	2	46.5%	33.27	15.8	$18.90	95	18.9	2	46.5%	22.95	43.60
3678982	$284.56	75	4.0	1	3.7%	13.28	0.4	$266.34	75	14.7	1	3.7%	10.91	1.86
3679015	$30.83	95	6.2	1	44.2%	18.42	13.9	$24.55	75	13.8	1	44.2%	10.50	12.90
3679081	$60.55	75	3.9	1	22.8%	13.54	5.4	$52.27	75	14.3	1	22.8%	11.18	4.20
3679092	$24.00	105	7.5	3	47.7%	21.46	11.4	$13.25	95	19.7	3	47.7%	15.05	31.60
3679174	$34.13	105	7.2	2	44.5%	25.81	18.7	$21.56	95	17.9	2	44.5%	17.91	50.90
3679246	$28.71	105	7.5	19	44.7%	25.81	12.1	$14.57	95	19.9	19	44.7%	17.93	32.90
3679301	$30.49	105	7.4	2	44.9%	25.81	14.5	$17.27	95	19.2	2	44.9%	17.91	38.20

3679444	$27.63	105	7.6	7	44.9%	25.81	10.6	$13.55	95	20.1	7	44.9%	17.94	29.10
3679499	$28.78	105	7.4	1	46.7%	25.81	13.7	$19.12	75	13.7	1	46.7%	12.32	16.80
3679543	$68.44	75	3.7	1	26.8%	14.99	9.4	$59.34	75	13.8	1	26.8%	12.35	7.80
3679785	$26.09	105	7.4	3	46.6%	19.6	15.5	$16.20	95	18.9	3	46.6%	13.79	42.50
3679796	$27.65	105	7.4	1	47.7%	24.78	13.5	$17.00	85	16.3	1	47.7%	14.46	24.70
3679939	$26.86	105	7.4	2	47.1%	21.68	15	$16.05	95	18.9	2	47.1%	15.18	41.10
3680082	$29.82	105	7.4	4	44.6%	25.81	13	$16.44	95	19.0	4	44.6%	17.93	36.20
3680170	$36.61	105	7.1	3	46.0%	25.81	21.9	$23.95	105	17.6	3	46.0%	21.03	56.30
3680181	$32.40	105	7.3	2	46.1%	25.81	18.3	$20.14	95	18.3	2	46.1%	17.91	49.70
3680203	$29.28	105	7.5	3	44.3%	25.81	12.5	$15.32	95	19.9	3	44.3%	17.92	34.00
3680225	$27.13	105	7.6	8	44.9%	25.81	11.3	$13.75	95	20.2	8	44.9%	17.94	30.50
3680258	$30.65	105	7.4	3	45.1%	25.81	14.7	$17.88	95	18.8	3	45.1%	17.93	40.60
3680291	$39.09	105	7.1	1	45.3%	29.02	21.5	$25.51	75	12.1	1	45.3%	13.67	34.10
3680302	$28.82	105	7.5	15	44.8%	25.81	12.2	$15.19	85	16.7	15	44.8%	15.03	28.20
3680423	$29.24	105	7.4	4	44.6%	25.07	13.1	$16.02	95	19.3	4	44.6%	17.44	36.00
3680522	$92.86	75	3.9	1	15.5%	16.24	4	$79.19	75	14.3	1	15.5%	13.34	2.90
3680599	$31.72	105	7.4	2	43.6%	25.82	14.6	$18.66	95	18.7	2	43.6%	17.91	40.10
3680632	$38.41	95	5.8	1	48.2%	18.42	23.3	$31.93	85	15.9	1	41.4%	12.73	21.30
3680747	$84.24	95	4.5	1	45.7%	21.95	47.5	$74.18	105	15.6	1	45.7%	21.22	48.10
3680764	$47.18	75	3.6	1	44.9%	14.95	13.6	$40.29	75	13.5	1	44.9%	12.34	12.00
3680863	$37.33	105	7.1	1	45.2%	25.81	21.9	$25.32	95	18.3	1	45.2%	17.93	36.40
3680885	$28.88	105	7.5	3	44.8%	25.81	12.4	$15.22	95	19.7	3	44.8%	17.92	33.80
3680907	$23.72	105	7.5	28	47.3%	20.53	11.7	$13.23	95	19.8	28	47.3%	14.44	32.20
3681127	$29.57	105	7.5	3	46.4%	28.67	12.2	$15.20	95	19.8	3	46.4%	19.80	33.70
3681138	$58.68	75	3.9	1	28.3%	15.74	6.5	$48.17	75	14.2	1	28.3%	12.96	5.20
3681292	$40.45	75	3.9	1	47.0%	18.37	8.3	$33.48	75	14.2	1	47.0%	15.10	7.00
3681419	$29.29	105	7.5	2	44.7%	25.81	12.8	$15.64	85	16.6	2	44.7%	15.01	29.60
3681622	$34.24	105	7.2	1	44.3%	25.81	18.6	$22.47	85	15.7	1	44.3%	15.02	33.10
3681677	$26.41	105	7.6	27	44.2%	25.81	9.3	$12.77	95	20.2	27	44.2%	17.93	25.30
3681710	$29.44	105	7.5	2	45.4%	26.43	13	$15.75	85	16.5	2	45.4%	15.34	30.00
3681831	$53.88	75	3.7	1	35.5%	16.08	9.9	$48.02	75	13.9	1	35.5%	13.24	9.00
3682029	$37.10	105	7.2	1	46.7%	32.11	19.2	$24.89	75	12.8	1	46.7%	14.98	25.90
3682084	$22.58	105	7.6	3	47.7%	20.05	10.7	$11.98	95	20.0	3	47.7%	14.09	29.40
3682117	$25.49	105	7.6	4	45.0%	25.81	8.9	$11.96	95	20.7	4	45.0%	17.94	23.80
3682260	$40.29	85	5.0	1	38.7%	18.31	10.5	$33.37	75	13.8	1	38.7%	12.33	9.70
3682304	$45.99	105	6.6	1	47.5%	25.84	32.4	$36.61	85	14.9	1	47.5%	15.04	29.60
3682359	$37.73	85	5.0	1	42.9%	18.3	12.1	$30.71	75	13.9	1	42.9%	12.33	10.40
3682469	$52.22	85	4.8	1	43.3%	26.34	17.1	$41.42	75	13.3	1	43.3%	17.28	14.90
3682524	$42.02	75	3.7	1	46.0%	14.7	11.6	$35.84	75	13.8	1	46.0%	12.14	10.40
3682656	$89.28	75	3.9	1	14.8%	15.03	3.1	$75.88	75	14.4	1	14.8%	12.36	2.00
3682678	$45.95	85	4.8	1	43.5%	21.23	16.4	$37.24	75	13.4	1	43.5%	14.19	14.30
3682744	$31.05	105	7.4	4	45.0%	25.81	15.2	$18.24	95	18.7	4	45.0%	17.93	41.70
3682750	$39.27	105	7.0	7	45.3%	25.81	24	$26.40	95	16.4	7	45.3%	17.93	59.60
3682942	$28.38	105	7.6	7	44.7%	25.81	11.7	$14.22	95	20.0	7	44.7%	17.93	31.80
3682953	$30.91	105	7.4	1	44.1%	24.28	15.6	$22.87	75	13.7	1	44.1%	11.65	14.70
3682986	$55.30	75	3.9	1	26.8%	14.98	5.9	$47.87	75	14.3	1	26.8%	12.35	4.60
3683041	$35.42	105	7.2	2	45.1%	29.35	17.6	$21.32	95	18.0	2	45.1%	20.27	48.70
3683063	$387.48	75	4.0	1	3.1%	14.63	1.6	$322.98	75	14.5	1	3.1%	11.98	0.70
3683118	$43.18	95	5.7	1	48.1%	22.84	24.5	$34.95	75	12.5	1	48.1%	12.79	24.60
3683272	$42.19	85	4.9	1	38.0%	17.26	12.6	$34.32	75	13.8	1	38.0%	11.66	10.80
3683294	$30.64	105	7.4	5	44.7%	25.81	14.5	$17.19	95	19.1	5	44.7%	17.93	39.80
3683349	$28.15	105	7.4	2	44.8%	21.92	14.7	$17.32	85	16.0	2	44.8%	12.90	34.40
3683371	$64.05	75	4.0	1	20.0%	13.95	3.5	$55.33	75	14.5	1	20.0%	11.51	2.60
3683426	$40.77	105	6.9	2	45.3%	25.81	26	$27.98	95	16.1	2	45.3%	17.91	63.80
3684000	$27.77	105	7.6	59	44.2%	25.81	11.6	$14.13	95	20.2	59	44.2%	17.93	31.20
3684035	$77.04	75	3.8	1	22.5%	16.02	7.1	$66.35	75	14.0	1	22.5%	13.18	5.70
3684044	$62.18	75	3.6	1	32.0%	15.82	10.7	$54.25	75	13.6	1	32.0%	13.03	9.00

3684088	$31.73	105	7.3	1	44.1%	25.84	15	$23.12	75	13.6	1	44.1%	12.32	14.20
3684099	$28.85	105	7.6	1	45.3%	26.94	12	$16.39	75	13.8	1	45.3%	12.71	20.60
3684143	$29.79	105	7.4	1	47.3%	25.83	15.8	$21.41	75	13.7	1	47.3%	12.32	15.40
3684187	$38.91	105	7.1	1	44.6%	29.02	20.1	$28.87	75	13.0	1	44.6%	13.68	19.70
4200100	$51.09	75	3.8	1	38.3%	18.05	9.10	$45.26	75	14.0	1	38.3%	14.82	8.10
4200104	$90.64	75	3.9	1	16.9%	16.82	4.80	$78.05	75	14.3	1	16.9%	13.81	4.00
4200116	$47.78	75	3.8	1	36.7%	14.97	9.00	$41.61	75	14.1	1	36.7%	12.35	7.40
4200244	$55.55	75	3.8	1	30.1%	14.98	7.50	$48.09	75	14.1	1	30.1%	12.35	6.10
4200332	$86.80	75	4.0	1	14.9%	15.18	2.70	$73.91	75	14.5	1	14.9%	12.49	1.70
4200364	$38.48	85	5.0	1	43.9%	18.30	13.50	$31.03	75	13.8	1	43.9%	12.33	11.90
4200372	$226.85	75	4.0	1	5.1%	14.72	0.80	$206.77	75	14.6	1	5.1%	12.08	1.86
4200396	$92.10	75	3.9	1	13.2%	12.89	3.30	$79.67	75	14.4	1	13.2%	10.64	2.60
4200540	$31.95	105	7.4	1	43.7%	25.82	15.50	$18.84	75	13.2	1	43.7%	12.31	29.00
4200572	$135.17	75	4.0	1	8.8%	13.67	2.10	$114.48	75	14.5	1	8.8%	11.25	1.20
4200628	$35.66	85	5.0	1	46.4%	18.19	12.90	$27.96	75	13.8	1	46.4%	12.26	13.30
4200652	$102.06	75	3.8	1	15.5%	14.63	6.00	$87.36	75	14.0	1	15.5%	12.05	4.70
4200660	$31.09	105	7.4	1	43.9%	25.84	14.40	$22.30	75	13.8	1	43.9%	12.32	13.60
4200676	$31.01	105	7.5	1	43.1%	25.82	14.10	$17.89	75	13.8	1	43.1%	12.32	23.90
4200756	$80.48	75	4.0	1	16.4%	15.77	2.60	$68.58	75	14.6	1	16.4%	12.97	1.80
4200764	$222.28	75	4.0	1	6.2%	17.77	1.60	$184.70	75	14.5	1	6.2%	14.53	0.70
4200820	$30.50	105	7.5	6	44.2%	27.09	13.10	$16.33	95	19.5	6	44.2%	18.66	36.10
4200924	$53.74	75	3.5	1	43.7%	14.95	16.50	$46.26	75	13.2	1	43.7%	12.34	14.80
4200980	$73.97	75	3.8	1	25.0%	17.84	7.50	$63.42	75	14.1	1	25.0%	14.66	6.00
4200988	$68.84	75	3.7	1	26.6%	15.48	9.10	$59.54	75	13.9	1	26.6%	12.75	7.50
4201004	$91.27	75	3.7	1	21.0%	18.81	7.30	$78.23	75	13.9	1	21.0%	15.43	5.90
4202000	$28.43	105	7.6	48	44.0%	25.82	11.00	$13.94	95	20.1	48	44.0%	17.93	29.80
4202016	$66.29	75	3.9	1	21.1%	14.68	4.70	$57.79	75	14.3	1	21.1%	12.10	3.90
4202040	$73.86	75	3.9	1	19.9%	15.25	5.30	$64.48	75	14.2	1	19.9%	12.55	4.50
4202056	$33.53	105	7.4	12	44.2%	28.18	15.80	$19.49	95	18.7	12	44.2%	19.45	43.70
4202072	$118.08	75	4.0	1	10.8%	14.81	2.50	$101.05	75	14.4	1	10.8%	12.18	1.80
4202088	$41.64	85	5.0	1	41.4%	23.29	9.90	$32.89	75	14.1	1	41.4%	15.48	8.40
4202128	$59.03	75	3.9	1	25.0%	14.99	5.70	$50.68	75	14.3	1	25.0%	12.35	4.40
4202144	$42.87	75	3.8	1	44.3%	17.79	8.60	$37.40	75	14.1	1	44.3%	14.63	7.10
4202184	$24.97	105	7.6	32	45.3%	23.58	10.30	$12.80	95	20.2	32	45.3%	16.47	28.20
4202264	$27.21	105	7.6	3	42.9%	25.82	9.50	$13.06	95	20.4	3	42.9%	17.93	25.60
4202288	$29.07	105	7.6	4	43.7%	28.18	10.70	$14.22	95	20.2	4	43.7%	19.45	29.20
4202349	$32.40	105	7.4	1	43.1%	25.82	15.30	$19.59	75	13.1	1	43.1%	12.32	27.60
4202416	$31.12	105	7.4	3	43.9%	25.82	14.40	$17.36	95	19.1	3	43.9%	17.92	39.50
4202608	$33.88	105	7.3	1	43.6%	25.82	17.60	$22.83	75	13.0	1	43.6%	12.32	25.90
4202720	$37.89	95	6.3	1	44.0%	33.16	9.70	$23.92	75	14.2	1	44.0%	18.04	10.30
4202752	$84.76	75	4.0	1	16.5%	18.12	1.80	$71.21	75	14.7	1	16.5%	14.85	0.90
4202832	$32.11	105	7.3	4	47.0%	27.55	17.00	$19.44	95	18.3	4	47.0%	19.00	46.70
4202896	$27.04	105	7.6	7	43.4%	25.82	9.60	$13.15	95	20.2	7	43.4%	17.93	26.00
4202928	$46.62	75	3.9	1	33.3%	14.97	7.00	$41.08	75	14.2	1	33.3%	12.35	6.00
4202968	$87.47	75	3.9	1	17.8%	18.46	3.70	$74.60	75	14.4	1	17.8%	15.13	2.90
4203008	$33.06	105	7.3	3	44.8%	25.81	17.60	$20.47	95	18.2	3	44.8%	17.93	48.40
4203032	$317.73	75	4.0	1	3.5%	14.16	0.40	$295.66	75	14.7	1	3.5%	11.62	1.86
4203088	$31.02	105	7.6	3	43.6%	31.89	10.00	$14.26	95	20.6	3	43.6%	22.08	27.60
4203096	$62.43	75	3.9	1	28.4%	20.98	5.30	$53.66	75	14.4	1	28.4%	17.18	4.10
4203104	$66.64	75	3.8	1	22.7%	13.28	6.20	$57.65	75	14.1	1	22.7%	10.97	4.90
4203120	$62.11	75	3.9	1	23.5%	15.24	5.30	$53.38	75	14.3	1	23.5%	12.55	4.10
4203264	$32.98	105	7.4	1	46.3%	31.66	14.00	$18.96	75	13.4	1	46.3%	14.79	21.40
4203272	$32.58	105	7.5	1	44.4%	31.45	11.90	$17.39	75	13.7	1	44.4%	14.69	21.20
4203296	$89.04	75	4.0	1	14.0%	14.87	2.20	$76.28	75	14.6	1	14.0%	12.24	1.40
4203312	$103.49	75	4.0	1	12.5%	15.04	2.70	$88.29	75	14.5	1	12.5%	12.37	1.90
4203320	$31.50	105	7.5	1	43.3%	30.07	11.90	$19.02	75	14.2	1	43.3%	14.17	15.30
4203384	$43.92	75	3.8	1	43.4%	14.95	11.10	$37.68	75	13.9	1	43.4%	12.34	9.80

4203392	$31.99	105	7.4	1	45.2%	26.28	16.40	$20.65	75	13.2	1	45.2%	12.51	23.20
4203424	$215.33	75	3.8	1	7.9%	18.93	3.90	$172.74	75	14.1	1	7.9%	15.47	2.80
4203440	$711.99	75	4.0	1	1.6%	14.47	0.50	$657.01	75	14.6	1	1.6%	11.83	1.86
4203464	$37.24	75	3.9	1	45.7%	18.48	6.40	$31.50	75	14.4	1	45.7%	15.19	5.30
4203472	$77.08	75	3.9	1	15.3%	11.89	3.70	$65.97	75	14.4	1	15.3%	9.83	2.50
4203480	$173.15	75	3.8	1	9.4%	16.29	5.00	$147.21	75	14.0	1	9.4%	13.36	3.80
4203488	$55.63	75	3.8	1	31.1%	14.97	8.20	$48.13	75	14.0	1	31.1%	12.35	6.70
4203544	$34.80	105	7.2	3	43.2%	25.82	18.20	$21.69	95	18.1	3	43.2%	17.92	49.60
4203576	$44.65	75	3.8	1	37.1%	12.49	9.20	$40.14	75	13.9	1	37.1%	10.33	8.30
4203608	$30.52	105	7.6	2	44.0%	29.70	11.70	$15.38	85	17.1	2	44.0%	17.13	26.50
4203616	$42.43	75	3.7	1	42.7%	12.76	11.50	$37.30	75	13.8	1	42.7%	10.56	9.70
4203632	$31.17	95	6.3	1	44.4%	20.40	12.80	$23.39	75	13.9	1	44.4%	11.53	12.80
4203640	$32.16	105	7.4	1	44.9%	29.53	13.50	$18.60	75	13.5	1	44.9%	13.91	22.50
4203648	$36.05	105	7.3	1	41.8%	25.86	18.40	$26.80	75	13.4	1	41.8%	12.32	17.50
4203656	$41.77	75	3.9	1	38.6%	14.96	8.20	$36.56	75	14.2	1	38.6%	12.34	6.70
4203676	$44.75	85	4.8	1	45.9%	24.61	14.70	$33.84	75	13.4	1	42.4%	16.33	15.70
4203688	$47.15	85	4.9	1	39.3%	23.14	12.40	$37.32	75	13.8	1	39.3%	15.39	10.60
4203736	$32.01	105	7.5	2	44.1%	26.94	15.30	$18.40	95	19.2	2	44.1%	18.54	39.20
4203768	$31.32	105	7.3	1	43.5%	19.73	19.70	$24.42	75	13.2	1	43.5%	9.68	19.90
4203792	$115.34	75	3.9	1	12.5%	16.74	3.40	$98.87	75	14.3	1	12.5%	13.74	2.70
4203800	$47.57	85	4.8	1	40.0%	18.31	17.30	$39.16	75	13.3	1	40.0%	12.33	15.10
4203816	$59.51	75	3.7	1	32.4%	15.64	10.40	$53.20	75	13.8	1	32.4%	12.88	9.50
4203864	$33.73	105	7.3	1	44.5%	27.86	16.40	$22.53	75	13.2	1	44.5%	13.14	20.90
4203928	$32.93	105	7.4	10	44.3%	30.44	13.10	$16.73	95	19.8	10	44.3%	21.25	36.20
4203984	$39.56	75	3.9	1	43.8%	14.94	8.60	$33.04	75	14.1	1	43.8%	12.33	7.70
4204032	$28.66	105	7.5	2	44.8%	25.81	12.00	$14.97	95	19.7	2	44.8%	17.91	32.60
4204136	$130.59	75	3.8	1	11.3%	12.79	5.70	$113.95	75	13.9	1	11.3%	10.54	5.00
4204344	$190.05	75	3.9	1	8.7%	20.84	3.10	$158.47	75	14.3	1	8.7%	16.97	2.00
4204432	$31.96	105	7.4	1	44.4%	25.82	16.10	$22.38	75	13.6	1	44.4%	12.32	18.20
4204488	$63.11	75	3.8	1	26.3%	14.99	7.20	$54.54	75	14.1	1	26.3%	12.35	5.80
4204568	$68.92	75	3.8	1	24.3%	13.47	8.70	$59.72	75	13.9	1	24.3%	11.12	7.10
4204599	$91.50	75	3.7	1	20.4%	16.32	8.40	$81.04	75	13.7	1	20.4%	13.41	7.70
4204608	$115.99	75	3.9	1	10.7%	14.00	2.60	$99.54	75	14.4	1	10.7%	11.53	1.90
4204616	$39.42	105	6.8	1	45.9%	21.61	28.60	$32.99	95	18.8	1	45.9%	15.14	25.90
4204688	$28.70	105	7.5	2	44.0%	23.98	13.20	$15.72	85	16.6	2	44.0%	14.02	30.40
4204768	$34.39	85	5.0	1	46.7%	18.08	11.90	$26.92	75	13.8	1	46.7%	12.20	12.30
4204792	$23.58	105	7.6	6	44.1%	20.54	10.20	$12.53	95	20.2	6	44.1%	14.43	28.00
4204816	$37.24	75	3.9	1	44.8%	18.13	6.20	$32.31	75	14.4	1	44.8%	14.91	4.90
4204824	$59.21	75	3.7	1	31.7%	14.73	10.40	$52.78	75	13.8	1	31.7%	12.15	9.50
4204848	$36.99	85	5.0	1	42.8%	18.41	11.30	$29.66	75	14.0	1	42.8%	12.39	9.90
4204896	$42.87	75	3.9	1	34.3%	14.97	5.80	$37.56	75	14.4	1	34.3%	12.35	4.80
4204944	$30.06	105	7.4	1	44.4%	23.32	15.80	$19.18	75	13.2	1	44.4%	11.25	27.30
4204984	$57.10	75	3.9	1	32.4%	20.52	6.60	$49.50	75	14.3	1	32.4%	16.82	5.60
4205028	$31.58	105	7.4	1	47.1%	31.66	12.90	$17.50	75	13.5	1	47.1%	14.78	23.00
4205152	$40.04	85	5.0	1	40.9%	18.31	12.40	$40.08	75	13.9	1	42.4%	12.95	9.10
4205216	$50.86	95	5.6	1	44.4%	23.98	27.30	$41.41	75	12.2	1	44.4%	13.38	26.80
4205256	$33.21	105	7.5	4	45.1%	33.52	11.60	$16.04	95	19.8	4	45.1%	23.10	32.20
4205288	$36.61	85	5.2	1	39.3%	20.21	8.40	$28.91	75	14.4	1	39.3%	13.54	7.00
4205304	$44.29	105	7.1	1	44.4%	35.58	21.40	$144.81	75	14.5	1	7.2%	12.39	0.80
4205312	$29.75	105	7.6	4	43.9%	29.70	10.40	$14.00	95	20.5	4	43.9%	20.56	28.10
4205384	$27.04	105	7.5	1	45.0%	23.22	12.30	$18.74	75	14.1	1	45.0%	11.20	12.60
4205400	$27.86	105	7.4	2	45.9%	24.64	12.60	$15.76	85	16.3	2	45.9%	14.38	29.30
4205504	$34.05	105	7.5	1	42.2%	29.70	13.20	$23.62	75	14.1	1	42.2%	14.01	12.20
4205520	$85.48	75	4.0	1	16.8%	17.01	3.20	$72.93	75	14.5	1	16.8%	13.97	2.40
4205536	$62.59	75	3.9	1	23.8%	14.99	5.90	$53.78	75	14.2	1	23.8%	12.35	4.60
4205648	$114.38	75	4.0	1	9.6%	12.84	1.40	$97.59	75	14.6	1	9.6%	10.59	0.70
4205672	$32.68	105	7.2	1	44.0%	21.80	19.90	$23.75	85	16.0	1	44.0%	12.84	26.60

4205680	$44.61	75	3.8	1	43.3%	17.68	9.10	$38.87	75	14.1	1	43.3%	14.55	7.50
4205776	$28.33	105	7.4	1	47.4%	24.24	15.20	$19.97	75	13.6	1	47.4%	11.64	17.80
4205848	$39.06	75	3.9	1	40.4%	14.96	7.60	$34.10	75	14.3	1	40.4%	12.34	6.10
4205856	$89.64	75	3.9	1	17.1%	16.81	4.70	$77.47	75	14.2	1	17.1%	13.81	4.00
4205888	$33.03	105	7.5	6	44.8%	32.57	11.80	$16.19	95	19.8	6	44.8%	22.50	32.80
4205904	$32.67	105	7.3	1	43.7%	25.82	16.10	$20.02	85	16.0	1	43.7%	15.02	30.80
4205936	$34.29	85	5.0	1	43.3%	14.42	12.90	$28.46	75	13.9	1	43.3%	9.85	11.10
4205976	$55.81	75	3.9	1	28.2%	17.50	5.20	$48.01	75	14.4	1	28.2%	14.38	4.00
4206000	$65.90	75	3.8	1	24.7%	14.99	6.70	$56.75	75	14.1	1	24.7%	12.35	5.30
4206064	$30.08	105	7.5	20	44.2%	27.39	12.10	$15.68	85	16.6	20	44.2%	15.79	28.20
4206088	$28.93	105	7.5	35	44.2%	25.81	11.80	$15.00	95	19.8	35	44.2%	17.93	32.20
4206171	$98.83	75	3.9	1	15.4%	17.45	4.20	$83.86	75	14.3	1	15.4%	14.31	3.00
4206236	$31.84	105	7.1	1	48.4%	19.14	23.60	$23.02	95	18.1	1	48.4%	13.50	39.30
4206240	$60.17	105	6.0	1	44.9%	19.17	44.80	$51.72	105	14.4	1	44.9%	15.75	66.90
4206280	$76.97	75	3.8	1	20.3%	13.61	6.60	$68.26	75	14.0	1	20.3%	11.23	5.90
4206296	$42.33	75	3.8	1	43.5%	14.94	10.20	$35.15	75	14.0	1	43.5%	12.33	9.50
4206344	$46.70	75	3.9	1	37.6%	19.00	6.60	$41.03	75	14.3	1	37.6%	15.60	5.70
4206490	$36.26	105	7.2	1	45.8%	26.75	20.60	$24.76	75	12.6	1	45.8%	12.71	29.40
4206496	$75.59	75	3.9	1	17.9%	15.02	3.60	$64.95	75	14.4	1	17.9%	12.36	2.80
4206504	$30.92	105	7.5	2	43.2%	25.82	13.50	$17.03	95	19.4	2	43.2%	17.91	35.90
4206560	$266.32	75	4.0	1	4.4%	14.97	0.70	$243.54	75	14.6	1	4.4%	12.27	1.86
4206744	$50.30	85	4.7	1	42.3%	18.41	19.40	$39.92	75	13.0	1	42.3%	12.39	16.90
4206824	$130.67	75	4.0	1	9.8%	15.91	1.70	$110.95	75	14.6	1	9.8%	13.07	1.00
4206904	$30.51	105	7.4	2	44.2%	24.51	15.20	$18.16	85	16.2	2	44.2%	14.31	34.40
4206928	$29.77	105	7.5	4	46.6%	29.02	12.10	$15.36	95	19.5	4	46.6%	20.06	33.70
4206960	$74.14	75	3.7	1	28.6%	20.39	9.00	$63.82	75	13.9	1	28.6%	16.71	7.40
4206976	$77.78	75	3.9	1	18.1%	15.02	4.30	$67.10	75	14.3	1	18.1%	12.36	3.50
4206984	$33.03	105	7.3	3	43.9%	25.82	16.80	$20.00	95	18.5	3	43.9%	17.92	46.10
4207000	$35.84	85	5.1	1	43.1%	22.06	8.80	$27.21	75	14.3	1	43.1%	14.71	8.20
4207040	$38.88	85	5.1	1	40.1%	19.38	10.10	$31.14	75	14.1	1	43.8%	13.01	8.50
4207120	$69.00	75	3.9	1	19.8%	13.30	5.20	$60.35	75	14.2	1	19.8%	10.97	4.50
4207128	$33.36	105	7.5	6	44.8%	33.29	11.60	$16.23	95	19.8	6	44.8%	22.95	32.40
4207160	$34.93	105	7.0	1	47.7%	22.62	24.00	$26.82	75	12.5	1	47.7%	10.94	25.80
4207208	$58.07	75	3.7	1	31.8%	14.97	9.70	$51.60	75	13.8	1	31.8%	12.35	8.80
4207224	$33.33	105	7.3	4	43.1%	25.82	16.10	$20.08	95	18.3	4	43.1%	17.93	44.40
4207312	$42.03	75	3.8	1	44.9%	14.95	10.90	$37.00	75	14.0	1	44.9%	12.34	9.20
4207368	$43.04	105	7.0	2	45.5%	33.76	22.50	$26.76	95	17.7	2	45.5%	23.26	48.40
4207384	$41.86	75	3.9	1	43.5%	18.73	8.10	$33.85	75	14.2	1	43.5%	15.39	7.60
4207472	$32.23	105	7.4	2	43.7%	25.82	15.60	$19.53	85	15.9	2	43.7%	15.02	34.60
4207480	$51.99	75	4.0	1	24.4%	13.21	4.10	$44.55	75	14.5	1	24.4%	10.91	2.90
4207560	$34.45	95	6.3	1	41.2%	21.94	12.30	$26.37	75	14.0	1	41.2%	12.33	11.30
4207616	$31.63	105	7.5	2	42.7%	25.82	14.10	$17.97	85	16.5	2	42.7%	15.02	29.60
4207688	$70.47	75	3.9	1	24.7%	19.99	5.40	$60.34	75	14.3	1	24.7%	16.37	4.20
4207712	$26.85	95	6.3	1	45.4%	16.05	12.30	$21.54	75	14.0	1	45.4%	9.26	11.30
4207800	$63.84	75	3.9	1	22.1%	15.00	4.70	$55.61	75	14.4	1	22.1%	12.36	3.90
4207880	$42.29	75	3.8	1	44.1%	14.94	10.40	$35.10	75	13.9	1	44.1%	12.33	9.70
4207896	$41.42	105	7.1	1	41.8%	25.86	23.10	$31.90	75	12.9	1	43.5%	12.33	22.20
4207960	$29.88	105	7.5	1	44.0%	25.82	13.00	$17.01	75	13.6	1	44.0%	12.31	23.50
4207976	$36.00	105	7.5	1	43.7%	36.14	11.90	$17.63	75	13.9	2	43.7%	16.64	21.90
4207992	$38.22	105	7.4	1	43.1%	36.42	13.70	$21.99	75	13.9	1	43.1%	16.77	18.10
4208008	$39.56	105	7.3	1	44.3%	37.29	15.90	$25.80	75	13.7	1	44.3%	17.13	15.90
4208024	$60.37	75	4.0	1	22.1%	14.37	4.00	$52.25	75	14.5	1	22.1%	11.86	3.10
4208040	$24.01	105	7.6	8	48.2%	25.36	9.20	$11.82	95	20.2	8	48.2%	17.65	25.40
4208064	$41.57	85	4.9	1	43.5%	19.72	14.40	$33.69	75	13.7	1	43.5%	13.23	12.40
4208208	$98.25	75	3.9	1	14.6%	16.93	3.30	$83.32	75	14.4	1	14.6%	13.89	2.20
4208240	$138.91	75	3.9	1	11.3%	18.63	3.60	$118.63	75	14.3	1	11.3%	15.25	2.90
4208312	$114.16	75	3.9	1	8.8%	10.20	2.00	$98.01	75	14.5	1	8.8%	8.53	1.10

4208392	$37.16	105	7.1	1	44.1%	25.82	20.10	$25.00	95	18.3	1	44.1%	17.93	33.30
4208416	$30.68	105	7.6	5	44.5%	31.67	10.50	$14.43	95	20.4	5	44.5%	21.92	29.10
4208432	$28.51	95	6.4	1	43.8%	21.92	9.00	$19.83	75	14.3	1	43.8%	12.32	9.10
4208472	$85.46	75	3.7	1	22.5%	18.68	7.40	$73.29	75	13.9	1	22.5%	15.32	6.00
4208504	$45.12	85	4.8	1	41.1%	18.31	16.30	$36.93	75	13.4	1	41.1%	12.33	14.20
4208568	$30.77	105	7.5	1	43.0%	25.82	13.40	$17.55	75	13.7	1	43.0%	12.32	23.60
4208624	$31.87	105	7.5	2	43.6%	28.67	13.00	$16.43	85	16.7	2	43.6%	16.53	29.90
4208632	$53.22	75	3.8	1	31.1%	13.46	8.50	$46.27	75	14.0	1	31.1%	11.11	7.00
4208744	$61.18	75	3.8	1	24.2%	12.45	6.60	$54.22	75	14.1	1	24.2%	10.29	5.80
4208760	$29.31	105	7.6	4	43.0%	25.82	11.30	$14.45	95	20.1	4	43.0%	17.93	30.70
4208819	$30.76	105	7.4	1	44.0%	25.82	13.90	$17.79	75	13.2	1	44.0%	12.31	26.30
4208896	$79.95	75	3.9	1	18.5%	15.86	4.70	$69.25	75	14.2	1	18.5%	13.04	4.00
4208960	$31.35	105	7.4	1	47.3%	28.34	15.60	$20.08	75	13.3	1	47.3%	13.36	21.70
4209000	$40.95	105	6.9	1	45.0%	25.81	25.80	$30.14	85	15.2	1	45.0%	15.03	32.00
4209080	$30.58	105	7.5	3	42.9%	25.82	13.00	$16.27	95	19.7	3	42.9%	17.93	35.50
4209224	$38.08	105	7.2	2	46.6%	35.04	18.00	$21.77	95	18.1	2	46.6%	24.05	49.50
4209248	$30.15	105	7.5	6	43.2%	25.82	12.50	$15.98	85	16.6	6	43.2%	15.02	28.90
4209400	$31.90	75	4.0	1	44.9%	13.97	6.30	$27.96	75	14.5	1	44.9%	11.54	5.00
4209416	$39.17	105	7.1	1	42.7%	25.83	21.50	$28.88	75	12.7	1	42.7%	12.32	26.40
4209432	$32.18	105	7.4	1	43.5%	25.08	16.20	$20.67	75	13.3	1	43.5%	11.99	23.20
4209496	$33.74	95	6.3	1	45.6%	26.76	11.30	$24.18	75	14.1	1	45.6%	14.71	10.90
4209528	$71.91	75	3.7	1	29.6%	20.84	8.80	$61.97	75	13.9	1	29.6%	17.06	7.30
4209696	$53.57	75	3.7	1	38.2%	14.97	12.90	$46.79	75	13.7	1	38.2%	12.35	10.90
4209728	$29.09	105	7.5	1	43.3%	25.82	11.10	$16.55	75	13.8	1	43.3%	12.32	16.60
4209792	$117.17	75	3.9	1	13.8%	18.98	4.00	$100.87	75	14.2	1	13.8%	15.54	3.30
4209896	$184.42	75	4.0	1	7.4%	17.31	1.80	$154.71	75	14.5	1	7.4%	14.17	0.90
4210096	$144.80	75	4.0	1	8.3%	15.15	1.10	$121.99	75	14.6	1	8.3%	12.45	0.30
4210128	$55.21	75	3.8	1	29.7%	12.34	9.10	$48.09	75	13.9	1	29.7%	10.20	7.50
4210224	$29.24	95	6.3	1	44.1%	17.24	13.30	$22.90	75	13.9	1	44.1%	9.88	12.90
4210240	$110.70	75	4.0	1	10.8%	13.93	2.00	$94.61	75	14.5	1	10.8%	11.47	1.30
4210256	$39.09	105	7.3	1	44.0%	35.05	16.80	$25.76	75	13.6	1	44.0%	16.20	17.20
4210280	$121.75	75	3.9	1	11.8%	13.92	4.20	$99.62	75	14.2	1	11.8%	11.46	3.60
4210464	$25.57	105	7.6	11	44.8%	25.96	8.50	$12.05	95	20.5	11	44.8%	18.04	23.20
4210600	$49.66	75	3.8	1	31.3%	12.66	7.50	$43.04	75	14.1	1	31.3%	10.47	6.00
4210720	$50.23	75	3.9	1	30.5%	12.90	7.10	$43.60	75	14.1	1	30.5%	10.66	5.70
4210768	$35.05	105	7.1	3	44.0%	19.15	23.80	$24.38	95	16.9	3	44.0%	13.49	59.10
4210792	$120.33	75	4.0	1	10.0%	14.59	1.60	$102.38	75	14.6	1	10.0%	12.00	0.90
4210800	$88.24	75	3.9	1	16.3%	15.69	4.30	$75.98	75	14.3	1	16.3%	12.91	3.50
4210808	$478.20	75	3.7	1	3.4%	14.62	6.00	$405.34	75	13.8	1	3.4%	11.98	4.70
4210816	$37.65	85	5.0	1	43.5%	18.30	12.30	$29.37	75	13.8	1	43.5%	12.33	11.40
4210832	$33.70	95	6.1	1	43.9%	19.28	15.80	$27.12	75	13.5	1	43.9%	10.94	14.90
4210912	$28.71	105	7.4	1	46.6%	24.26	15.00	$20.78	75	13.8	1	46.6%	11.65	14.60
4210960	$33.96	105	7.3	1	43.9%	25.82	18.00	$22.50	75	12.7	1	43.9%	12.32	32.20
4211000	$28.28	105	7.6	6	43.3%	25.82	10.00	$13.68	95	20.0	6	43.3%	17.93	27.60
4211072	$27.77	105	7.3	1	47.3%	20.37	17.80	$20.60	75	13.4	1	47.3%	9.96	19.20
4211152	$25.48	105	7.6	5	43.9%	20.74	11.40	$13.96	95	19.9	5	43.9%	14.57	31.50
4211160	$26.61	105	7.4	1	46.8%	21.17	15.00	$19.51	75	13.8	1	46.8%	10.31	15.20
4211232	$33.58	95	6.3	7	46.1%	30.69	8.60	$14.94	95	20.0	6	46.1%	25.08	28.60
4211272	$30.01	105	7.5	10	43.7%	26.28	12.30	$15.79	95	19.6	10	43.7%	18.24	33.80
4211328	$55.11	75	4.0	1	24.7%	14.99	4.10	$47.24	75	14.5	1	24.7%	12.35	3.00
4211336	$30.57	105	7.5	5	43.1%	30.07	10.10	$14.41	95	20.2	5	43.1%	20.81	27.80
4211348	$32.85	105	7.4	6	44.7%	29.70	13.70	$17.47	95	19.1	6	44.7%	20.55	38.00
4211456	$35.62	85	5.0	1	41.3%	15.99	11.10	$29.19	75	13.9	1	41.3%	10.85	9.40
4211472	$48.91	105	6.7	2	43.5%	25.82	31.70	$35.33	95	15.0	2	43.5%	17.92	75.50
4211576	$67.08	75	3.9	1	24.2%	14.99	6.70	$55.10	75	14.2	1	24.2%	12.35	5.40
4211616	$122.19	75	4.0	1	9.5%	14.67	1.00	$102.98	75	14.7	1	9.5%	12.06	0.20
4211624	$210.12	75	4.0	1	5.3%	12.60	1.70	$175.11	75	14.5	1	5.3%	10.37	0.70

4211632	$136.17	75	4.0	1	9.6%	16.47	1.60	$115.41	75	14.6	1	9.6%	13.52	0.90
4211648	$40.37	85	5.0	1	42.0%	20.70	11.50	$32.31	75	14.0	1	42.0%	13.86	9.80
4211680	$30.28	105	7.5	5	44.0%	30.25	10.50	$14.44	95	20.2	5	44.0%	20.95	28.80
4211720	$29.04	105	7.5	2	44.0%	25.82	11.90	$15.07	95	19.8	2	44.0%	17.91	32.40
4211736	$37.71	95	6.2	1	44.3%	28.69	12.50	$27.10	75	14.0	1	44.3%	15.79	12.00
4211804	$32.19	105	7.3	1	43.9%	23.58	17.50	$20.94	85	15.8	1	43.9%	13.81	32.30
4211836	$171.22	75	3.9	1	8.3%	17.95	2.10	$143.28	75	14.5	1	8.3%	14.70	1.10
4211976	$31.51	95	6.3	1	44.4%	21.92	11.70	$23.04	75	14.0	1	44.4%	12.32	11.80
4212104	$66.67	75	4.0	1	19.7%	15.00	3.10	$57.05	75	14.5	1	19.7%	12.36	2.10
4212184	$141.35	75	3.8	1	10.2%	13.53	4.70	$31.41	95	15.5	2	43.9%	16.36	70.40
4212224	$43.12	105	6.8	2	43.9%	23.46	29.10	$123.14	75	14.1	1	10.2%	11.14	4.00
4212296	$31.00	95	6.3	1	42.8%	19.37	12.10	$24.20	75	14.0	1	42.8%	11.00	11.10
4212376	$42.77	85	5.0	1	45.6%	25.91	11.90	$31.67	75	13.8	1	45.6%	17.15	11.20
4212396	$28.64	105	7.5	1	44.2%	25.81	11.20	$16.52	75	13.7	1	44.2%	12.32	18.60
4212496	$41.61	75	4.0	1	44.0%	21.08	6.30	$32.93	75	14.5	1	44.0%	17.28	5.70
4212504	$32.66	105	7.4	1	43.7%	25.82	16.30	$20.00	85	16.2	1	43.7%	15.02	30.80
4212512	$249.03	75	3.9	1	4.3%	10.71	2.50	$210.83	75	14.4	1	4.3%	8.93	1.50
4212536	$28.82	105	7.5	12	43.8%	25.82	11.20	$14.85	95	19.8	12	43.8%	17.93	30.90
4212656	$151.28	75	4.0	1	8.3%	15.07	1.90	$127.04	75	14.5	1	8.3%	12.39	0.90
4212704	$25.21	105	7.6	2	43.1%	20.94	11.60	$13.54	95	20.3	2	43.1%	14.69	31.30
4212864	$39.33	85	4.9	1	47.6%	22.48	13.20	$30.21	75	13.6	1	47.6%	14.99	13.80
4213120	$88.58	75	3.9	1	17.3%	17.43	4.20	$75.95	75	14.3	1	17.3%	14.31	3.40
4213152	$348.55	75	3.8	1	4.4%	16.09	4.00	$293.41	75	14.1	1	4.4%	13.17	2.90
4213168	$41.57	105	7.0	1	42.4%	25.86	23.90	$32.14	75	12.7	1	42.4%	12.33	23.00
4213208	$30.40	105	7.5	12	42.7%	25.82	12.70	$16.01	95	19.8	12	42.7%	17.93	34.60
4213216	$30.47	105	7.5	2	42.6%	25.82	12.30	$16.61	85	16.5	2	42.6%	15.01	28.50
4213232	$39.99	95	6.0	1	43.4%	21.92	19.70	$30.15	75	13.0	1	43.4%	12.33	21.40
4213240	$36.19	75	3.9	1	46.8%	14.11	8.90	$30.71	75	14.2	1	46.8%	11.66	7.80
4213384	$167.15	75	4.0	1	7.6%	15.94	1.50	$140.30	75	14.5	1	7.6%	13.07	0.60
4213392	$34.29	105	7.5	1	43.1%	31.45	13.00	$22.81	75	14.1	1	43.1%	14.70	12.90
4213400	$28.10	105	7.3	1	43.7%	20.00	15.10	$21.65	75	13.6	1	43.7%	9.80	14.30
4213408	$61.88	75	3.8	1	24.8%	11.67	8.20	$53.91	75	14.0	1	24.8%	9.66	6.70
4213418	$220.53	75	4.0	1	5.6%	15.11	1.50	$183.78	75	14.5	1	5.6%	12.40	0.60
4213440	$40.90	85	5.0	1	41.2%	22.07	10.10	$32.42	75	14.1	1	41.2%	14.71	8.60
4213480	$34.64	105	7.3	1	47.9%	33.75	15.70	$20.93	75	12.9	1	47.9%	15.66	27.30
4213512	$42.23	75	3.9	1	38.7%	14.96	8.40	$37.00	75	14.2	1	38.7%	12.34	6.90
4213596	$41.06	105	7.2	1	44.4%	36.14	18.50	$26.93	75	13.2	1	44.4%	16.65	22.00
4213608	$41.22	105	7.3	1	44.3%	37.29	17.80	$23.55	85	15.8	1	44.3%	21.29	38.40
4213632	$97.70	75	3.7	1	17.5%	15.02	7.50	$86.04	75	13.9	1	17.5%	12.36	6.80
4213648	$32.26	105	7.4	2	43.0%	25.82	14.90	$18.67	95	18.9	2	43.0%	17.91	38.90
4213704	$33.44	105	7.4	4	43.4%	29.88	13.40	$17.22	95	19.6	4	43.4%	20.68	36.60
4213768	$67.33	75	3.6	1	32.1%	18.29	11.10	$58.35	75	13.6	1	32.1%	15.02	9.30
4213776	$35.47	75	4.0	1	32.0%	10.76	4.10	$31.10	75	14.6	1	32.0%	8.93	3.20
4213800	$21.74	105	7.6	3	46.3%	17.56	10.60	$12.33	95	19.8	3	46.3%	12.42	29.30
4213832	$48.03	75	3.6	1	36.7%	10.23	12.10	$43.94	75	13.6	1	36.7%	8.57	11.30
4213864	$35.78	105	7.4	1	47.0%	37.87	13.20	$23.76	75	14.0	1	47.0%	17.38	12.30
4213880	$32.61	105	7.5	4	47.1%	36.98	9.40	$14.26	95	20.0	4	47.1%	25.27	26.30
4213896	$93.38	75	4.0	1	12.8%	14.20	1.90	$79.35	75	14.6	1	12.8%	11.69	1.10
4213952	$46.15	85	4.8	1	40.1%	18.31	16.20	$37.90	75	13.4	1	40.1%	12.33	14.10
4213992	$36.80	105	7.1	1	45.9%	26.75	21.20	$26.95	75	12.9	1	45.9%	12.72	22.20
4214000	$49.87	75	3.9	1	28.7%	14.66	5.40	$43.24	75	14.3	1	28.7%	12.09	4.20
4214064	$23.13	105	7.6	5	46.0%	20.43	9.80	$11.92	95	20.1	5	46.0%	14.38	27.20
4214160	$31.91	105	7.4	1	43.7%	25.83	15.40	$22.30	75	13.8	1	43.7%	12.32	17.00
4214264	$27.64	105	7.6	2	43.2%	25.82	10.40	$14.01	85	17.2	2	43.2%	15.01	23.60
4214296	$83.35	75	3.8	1	21.8%	18.08	6.60	$72.98	75	14.0	1	21.8%	14.84	5.90
4214376	$69.44	75	3.9	1	19.9%	13.81	5.10	$59.09	75	14.2	1	19.9%	11.40	3.80
4214520	$30.73	95	6.2	1	45.6%	19.46	13.90	$24.10	75	13.9	1	45.6%	11.05	13.00

4214568	$92.64	75	4.0	1	12.8%	13.84	2.20	$78.98	75	14.6	1	12.8%	11.41	1.40
4214584	$158.13	75	4.0	1	7.7%	15.94	0.70	$18.48	75	13.8	1	46.2%	14.34	16.80
4214600	$31.19	105	7.4	1	46.2%	30.44	12.40	$145.08	75	14.7	1	7.7%	13.07	1.86
4214640	$394.83	75	4.0	1	3.1%	15.94	0.60	$360.51	75	14.6	1	3.1%	13.04	1.86
4214656	$57.11	75	3.9	1	27.7%	16.48	6.10	$49.29	75	14.3	1	27.7%	13.56	4.80
4214712	$29.71	105	7.5	4	43.7%	25.82	12.50	$15.59	95	19.8	4	43.7%	17.93	34.00
4214760	$232.32	75	4.0	1	6.2%	18.83	1.40	$192.43	75	14.5	1	6.2%	15.38	0.50
4214800	$34.21	85	5.0	1	45.5%	16.63	12.30	$27.42	75	13.9	1	45.5%	11.27	11.10
4214808	$61.07	75	3.8	1	28.0%	14.98	7.90	$52.78	75	14.1	1	28.0%	12.35	6.40
4214896	$51.93	75	3.9	1	29.3%	15.56	6.00	$44.90	75	14.3	1	29.3%	12.81	4.70
4215192	$30.10	105	7.4	2	43.3%	25.82	12.30	$16.64	85	16.3	2	43.3%	15.01	28.80
4215232	$28.46	105	7.6	3	42.8%	25.82	11.30	$14.29	95	20.2	3	42.8%	17.92	30.30
4215248	$49.33	85	4.9	1	39.9%	23.78	13.70	$39.40	75	13.6	1	39.9%	15.80	11.90
4215328	$30.36	105	7.5	7	44.0%	25.82	13.50	$16.55	95	19.3	7	44.0%	17.93	37.00
4215368	$36.09	75	3.9	1	43.6%	14.94	7.60	$28.04	75	14.2	1	43.6%	12.33	7.70
4215384	$30.51	105	7.5	4	43.3%	25.82	13.10	$16.43	95	19.5	4	43.3%	17.93	36.00
4215400	$37.88	75	3.6	1	39.0%	6.71	11.10	$34.52	85	17.0	1	39.0%	6.67	9.00
4215416	$39.04	85	4.9	1	47.2%	22.20	12.70	$31.28	75	13.7	1	47.2%	14.81	10.90
4215432	$31.45	95	6.4	1	39.7%	21.94	9.20	$23.19	75	14.4	1	39.7%	12.33	8.10
4215464	$76.30	75	3.9	1	16.6%	11.89	4.90	$66.65	75	14.2	1	16.6%	9.83	4.10
4215479	$49.26	95	5.6	1	40.4%	21.23	23.00	$40.75	75	12.3	1	40.4%	11.95	22.40
4215584	$44.79	85	4.9	1	38.5%	18.32	14.10	$36.59	75	13.7	1	38.5%	12.33	12.20
4215680	$46.97	75	3.7	1	41.9%	14.49	12.20	$41.12	75	13.8	1	41.9%	11.96	10.30
4215744	$44.15	75	3.9	1	32.4%	13.92	6.00	$38.74	75	14.3	1	32.4%	11.49	5.10
4215755	$31.70	105	7.3	2	46.2%	23.97	18.90	$20.36	95	18.1	2	46.2%	16.70	51.30
4215760	$43.69	75	3.8	1	41.6%	13.57	10.90	$38.24	75	13.9	1	41.6%	11.21	9.10
4215776	$25.29	105	7.6	5	43.1%	20.06	11.10	$13.85	95	19.9	5	43.1%	14.11	30.50
4215808	$53.86	75	3.9	1	31.1%	15.65	6.90	$44.36	75	14.2	1	31.1%	12.89	5.60
4215848	$27.17	105	7.6	4	42.4%	25.82	8.90	$12.80	95	20.5	4	42.4%	17.93	24.00
4215872	$31.09	105	7.4	1	44.1%	25.81	14.70	$20.50	75	13.8	1	44.1%	12.32	18.00
4215888	$33.77	105	7.4	1	46.0%	32.57	14.00	$21.76	75	13.8	1	46.0%	15.17	16.20
4216056	$32.44	105	7.3	1	44.4%	25.82	16.60	$22.64	75	13.5	1	44.4%	12.32	19.50
4216080	$53.38	75	3.9	1	25.2%	12.55	5.80	$46.12	75	14.3	1	25.2%	10.38	4.50
4216128	$29.48	105	7.5	1	44.2%	25.81	12.70	$17.32	75	13.8	1	44.2%	12.32	20.50
4216136	$143.28	75	4.0	1	8.3%	14.09	1.90	$121.06	75	14.5	1	8.3%	11.59	1.00
4216144	$29.97	105	7.5	4	43.6%	29.71	10.10	$14.24	95	20.1	4	43.6%	20.55	27.80
4216256	$42.78	105	6.9	2	44.6%	25.81	27.50	$29.79	95	15.9	2	44.6%	17.92	67.00
4216272	$36.44	85	5.0	1	42.7%	18.30	10.90	$29.44	75	14.0	1	42.7%	12.33	9.30
4216296	$21.90	105	7.5	4	47.4%	15.37	13.60	$13.99	95	19.0	4	47.4%	10.94	37.50
4216304	$78.31	75	3.9	1	20.5%	19.45	3.70	$67.12	75	14.4	1	20.5%	15.94	2.90
4216448	$28.16	105	7.3	1	48.5%	21.46	18.00	$18.79	85	15.6	1	48.5%	12.66	34.50
4216568	$44.18	75	3.8	1	44.1%	18.37	8.90	$38.42	75	14.1	1	44.1%	15.10	7.30
4216816	$48.51	75	4.0	1	27.6%	15.22	3.70	$41.78	75	14.6	1	27.6%	12.54	2.60
4216848	$32.49	105	7.5	3	43.5%	30.25	12.00	$15.61	95	20.0	3	43.5%	20.95	32.90
4216960	$64.70	75	3.9	1	23.2%	16.30	4.90	$56.20	75	14.3	1	23.2%	13.41	4.10
4217024	$64.01	75	4.0	1	17.9%	11.98	3.00	$55.20	75	14.5	1	17.9%	9.91	2.20
4217040	$43.60	75	3.9	1	36.2%	16.46	6.10	$38.25	75	14.3	1	36.2%	13.55	5.20
4217136	$27.10	105	7.5	1	47.5%	24.94	12.90	$19.48	75	14.0	1	47.5%	11.94	12.30
4217152	$34.35	105	7.4	1	42.8%	29.02	14.90	$24.36	75	13.8	1	42.8%	13.60	14.00
4217320	$147.13	75	4.0	1	7.4%	12.09	1.90	$123.75	75	14.5	1	7.4%	9.97	1.00
4217416	$74.66	75	3.7	1	23.3%	14.99	8.10	$66.12	75	13.9	1	23.3%	12.36	7.30
4217440	$96.36	75	3.6	1	19.4%	14.17	10.10	$85.93	75	13.5	1	19.4%	11.68	9.40
4217448	$30.89	105	7.5	4	42.9%	25.82	13.40	$16.58	95	19.6	4	42.9%	17.93	36.40
4217528	$52.66	75	3.8	1	31.7%	12.78	9.20	$47.01	75	13.9	1	31.7%	10.57	8.30
4217680	$68.29	75	3.9	1	21.4%	17.00	3.60	$58.58	75	14.4	1	21.4%	13.97	2.70
4217832	$43.46	75	3.8	1	44.1%	15.71	10.60	$36.94	75	13.9	1	44.1%	12.94	9.30
4217840	$30.69	105	7.2	1	46.3%	18.82	20.70	$22.35	95	19.1	1	46.3%	13.27	29.60

4217976	$76.96	75	4.0	1	16.1%	14.11	2.60	$65.52	75	14.5	1	16.1%	11.63	1.70
4218000	$28.19	85	5.2	1	44.9%	17.33	7.10	$21.47	75	14.5	1	44.9%	11.71	6.70
4218048	$34.70	105	7.3	1	47.2%	32.33	16.50	$20.69	75	12.8	1	47.2%	15.06	31.00
4218072	$29.91	105	7.5	1	44.1%	25.81	13.30	$16.76	75	13.6	1	44.1%	12.31	25.00
4218080	$66.23	75	3.8	1	27.0%	17.08	7.30	$57.01	75	14.1	1	27.0%	14.04	5.90
4218088	$44.93	95	5.9	1	46.4%	29.02	19.70	$33.47	75	13.0	1	46.4%	15.99	20.30
4218136	$34.51	105	7.5	2	44.6%	33.78	12.60	$17.04	95	19.7	2	44.6%	23.25	34.90
4218152	$27.16	105	7.6	3	43.4%	25.82	10.00	$13.23	95	20.4	3	43.4%	17.93	26.90
4218192	$97.65	75	4.0	1	10.6%	11.36	1.50	$83.74	75	14.6	1	10.6%	9.48	0.70
4218256	$52.67	75	3.6	1	41.3%	14.96	14.40	$46.17	75	13.5	1	41.3%	12.34	12.30
4218272	$46.42	75	3.9	1	37.8%	15.62	8.50	$38.80	75	14.2	1	37.8%	12.88	7.00
4218312	$32.63	95	6.1	1	46.4%	19.36	16.60	$25.19	75	13.4	1	46.4%	10.99	17.00
4218360	$77.86	75	4.0	1	16.5%	14.11	3.40	$66.95	75	14.5	1	16.5%	11.63	2.60
4218400	$52.79	75	3.9	1	29.8%	17.39	5.10	$45.16	75	14.4	1	29.8%	14.29	3.90
4218496	$66.02	85	4.2	1	41.7%	17.17	27.50	$58.85	75	11.8	1	41.7%	11.60	26.80
4218568	$43.77	75	3.7	1	41.6%	10.32	13.50	$38.53	75	13.6	1	41.6%	8.57	11.50
4218576	$46.72	75	3.9	1	35.2%	14.97	7.20	$39.40	75	14.2	1	35.2%	12.35	6.30
4218608	$95.28	75	4.0	1	13.8%	15.88	2.30	$81.90	75	14.5	1	13.8%	13.06	1.60
4218664	$94.89	75	3.9	1	15.8%	18.23	3.00	$79.69	75	14.4	1	15.8%	14.95	1.90
4218736	$55.49	75	3.7	1	35.5%	14.97	11.60	$49.90	75	13.7	1	35.5%	12.35	10.70
4218768	$32.86	105	7.4	1	44.6%	28.67	14.90	$19.80	75	13.3	1	44.6%	13.51	24.90
4218800	$55.31	75	3.9	1	26.1%	14.99	5.40	$47.73	75	14.4	1	26.1%	12.35	4.10
4218888	$32.64	105	7.4	1	43.6%	25.82	16.10	$20.40	75	13.1	1	43.6%	12.32	27.50
4218960	$25.64	105	7.5	1	43.4%	19.15	12.70	$15.66	75	13.5	1	43.4%	9.43	24.10
4219040	$32.25	95	6.2	1	44.0%	21.92	12.20	$23.43	75	13.9	1	44.0%	12.32	12.40
4219048	$41.23	85	4.8	1	44.1%	17.99	15.90	$32.56	75	13.3	1	38.4%	12.13	15.20
4219160	$28.40	105	7.5	5	46.8%	28.50	10.80	$14.23	95	19.8	5	46.8%	19.69	30.10
4219161	$62.78	75	3.8	1	25.1%	13.21	7.40	$54.46	75	14.0	1	25.1%	10.91	6.00
4219208	$32.27	105	7.4	1	43.6%	25.82	15.90	$22.36	75	13.7	1	43.6%	12.32	18.20
4219432	$75.87	75	4.0	1	18.2%	16.81	2.60	$64.24	75	14.6	1	18.2%	13.81	1.70
4219472	$123.74	75	4.0	1	8.7%	11.53	2.20	$105.41	75	14.5	1	8.7%	9.52	1.30
4219536	$29.88	105	7.5	3	43.1%	24.65	13.20	$16.23	95	19.6	3	43.1%	17.15	36.10
4219576	$29.10	105	7.6	5	44.4%	30.44	9.20	$13.12	95	20.9	5	44.4%	21.25	25.10
4219584	$28.88	105	7.5	3	44.6%	25.81	11.80	$15.29	95	19.5	3	44.6%	17.93	32.70
4219680	$130.83	75	3.9	1	10.6%	15.06	3.80	$112.75	75	14.2	1	10.6%	12.38	3.10
4219696	$33.31	95	6.3	1	43.2%	21.92	13.00	$24.46	75	14.0	1	43.2%	12.33	13.10
4219752	$29.35	105	7.5	4	43.1%	25.82	11.30	$15.03	95	19.8	4	43.1%	17.93	31.00
4219784	$26.62	105	7.6	6	43.5%	25.82	9.00	$12.87	95	20.2	6	43.5%	17.93	24.80
4219856	$38.20	105	7.3	1	43.3%	33.05	16.70	$25.37	75	13.6	1	43.3%	15.37	17.20
4219920	$28.11	105	7.6	11	43.4%	25.82	11.30	$14.19	95	20.2	11	43.4%	17.93	30.50
4219976	$110.51	75	3.9	1	12.6%	12.77	4.70	$95.95	75	14.1	1	12.6%	10.54	4.00
4220080	$59.00	75	3.7	1	30.7%	14.51	9.70	$51.12	75	13.8	1	30.7%	11.97	8.00
4220096	$67.72	75	3.8	1	25.3%	14.99	7.80	$58.13	75	14.0	1	25.3%	12.35	6.30
4220104	$35.09	85	5.1	1	44.3%	18.30	11.00	$27.19	75	14.1	1	44.3%	12.33	10.10
4220136	$18.86	105	7.6	8	47.0%		8.8	$10.38	95	20.2	8	47.0%	11.61	24.50
4220144	$30.62	95	6.3	1	41.7%	18.8	11.4	$23.90	75	14.1	1	41.7%	10.69	10.40
4220152	$132.72	75	4.0	1	9.8%	15.82	2.1	$113.03	75	14.5	1	9.8%	12.99	1.40
4220216	$37.34	85	5.0	1	38.5%	15.46	11	$30.62	75	14.0	1	38.5%	10.51	9.40
4220240	$35.68	85	5.1	1	43.3%	19.25	10	$27.47	75	14.1	1	43.3%	12.94	9.90
4220248	$33.99	85	5.1	1	44.9%	17.8	10.7	$26.61	75	14.0	1	44.9%	12.01	9.80
4220328	$92.01	75	3.9	1	15.8%	17.23	3.4	$79.00	75	14.4	1	15.8%	14.14	2.60
4220336	$93.92	75	3.9	1	14.0%	14.87	3	$81.24	75	14.4	1	14.0%	12.24	2.30
4220352	$25.15	105	7.5	9	46.5%	21.57	12.1	$14.07	95	19.6	9	46.5%	15.13	33.60
4220416	$40.95	85	4.9	1	44.3%	20.32	14	$32.56	75	13.7	1	44.3%	13.61	12.50
4220424	$32.44	105	7.4	1	45.2%	29.02	14.3	$18.31	75	13.2	1	45.2%	13.75	27.50
4220432	$35.69	105	7.5	4	43.2%	35.06	11.7	$16.43	95	20.0	4	43.2%	24.05	32.30
4220512	$32.27	105	7.4	3	45.4%	29.88	13.6	$16.97	95	19.3	3	45.4%	20.69	37.60

4220528	$39.76	75	3.8	1	40.7%	12.88	8.5	$34.86	75	14.1	1	40.7%	10.65	7.00
4220634	$621.41	75	3.0	1	4.1%	11.37	16.6	$544.69	75	12.0	1	4.1%	9.47	14.30
4220648	$44.61	75	3.6	1	48.3%	14.63	14.5	$39.44	75	13.5	1	48.3%	12.08	12.50
4220662	$35.51	105	7.2	1	42.7%	25.85	18.6	$26.38	75	13.4	1	42.7%	12.32	17.60
4220664	$116.74	75	3.8	1	15.3%	21.38	4.5	$19.72	75	13.4	1	43.6%	12.32	20.90
4220672	$31.55	105	7.4	1	43.6%	25.82	14.5	$98.37	75	14.2	1	15.3%	17.46	3.40
4220704	$36.07	95	6.1	1	44.3%	20.97	17.2	$28.68	75	13.5	1	44.3%	11.83	16.20
4220776	$40.22	75	3.8	1	45.1%	14.94	9.8	$34.36	75	14.0	1	45.1%	12.33	8.50
4220792	$35.31	95	6.2	1	42.9%	21.94	14.8	$27.52	75	13.8	1	42.9%	12.33	13.70
4220800	$36.21	105	7.3	1	45.0%	32.57	16.1	$23.86	75	13.5	1	45.0%	15.17	17.10
4220840	$36.50	85	5.0	1	45.0%	19.04	11.9	$28.74	75	13.9	1	45.0%	12.80	10.80
4220904	$47.98	75	3.8	1	40.1%	15.54	10.7	$41.77	75	13.9	1	40.1%	12.81	8.90
4220992	$27.02	95	6.4	1	43.6%	19.87	9.2	$20.15	75	14.4	1	43.6%	11.25	8.30
4221064	$41.77	85	5.0	1	38.2%	18.31	11.6	$33.86	75	13.9	1	38.2%	12.33	9.90
4221176	$62.74	75	3.5	1	35.0%	15.05	14	$56.77	75	13.3	1	35.0%	12.41	13.10
4221200	$30.31	105	7.5	1	43.8%	25.82	13.4	$20.59	75	14.0	1	43.8%	12.32	14.80
4221384	$29.73	95	6.4	1	43.1%	21.92	10.3	$21.28	75	14.4	1	43.1%	12.33	9.90
4221400	$31.87	105	7.4	1	44.6%	25.81	16.2	$20.13	75	13.2	1	44.6%	12.32	27.00
4221444	$35.82	105	7.5	1	44.2%	35.59	12.7	$21.12	75	14.1	1	44.2%	16.42	15.50
4221648	$28.66	105	7.5	10	44.0%	25.82	11.3	$14.24	95	20.0	10	44.0%	17.93	30.90
4221688	$31.43	105	7.5	2	43.3%	25.82	14.5	$18.24	75	13.3	2	43.3%	12.31	27.40
4221712	$38.97	95	6.3	1	43.1%	30.69	11.1	$25.47	75	14.2	1	43.1%	16.90	11.30
4221728	$56.30	75	3.9	1	25.6%	14.99	5.3	$48.23	75	14.4	1	25.6%	12.35	4.00
4221752	$53.16	75	3.9	1	27.4%	14.36	6.1	$46.14	75	14.3	1	27.4%	11.85	4.80
4221786	$153.05	75	4.0	1	8.8%	16.49	2.1	$128.90	75	14.5	1	8.8%	13.52	1.20
4221792	$219.69	75	4.0	1	5.9%	16.53	1.3	$182.48	75	14.6	1	5.9%	13.54	0.40
4221816	$93.20	75	3.9	1	15.6%	16.83	3.7	$79.22	75	14.3	1	15.6%	13.81	2.60
4221872	$26.75	105	7.6	6	44.8%	25.81	9	$12.72	95	20.0	6	44.8%	17.93	25.10
4221960	$32.15	105	7.3	1	43.8%	23.72	17.4	$22.14	75	13.2	1	43.8%	11.41	23.10
4221968	$82.29	75	4.0	1	13.5%	12.65	2.1	$69.94	75	14.6	1	13.5%	10.44	1.20
4221976	$50.66	75	3.9	1	37.9%	23.9	5.2	$43.82	75	14.6	1	37.9%	19.72	4.00
4222016	$24.27	105	7.5	1	44.1%	17.6	12.9	$18.74	75	14.1	1	44.1%	8.74	12.00
4222104	$30.34	105	7.5	5	43.4%	25.82	12.9	$16.36	95	19.4	5	43.4%	17.93	35.50
4222128	$118.50	75	3.9	1	12.6%	17.15	3.7	$101.62	75	14.3	1	12.6%	14.07	3.00
4222144	$25.83	105	7.4	2	47.6%	20.73	14.8	$16.43	85	16.2	2	47.6%	12.26	31.90
4222264	$39.20	105	7.1	5	44.4%	26.28	23.1	$25.12	95	17.0	5	44.4%	18.23	57.90
4222280	$30.32	105	7.5	1	42.9%	25.82	12.5	$19.16	75	13.9	1	42.9%	12.32	16.00
4222296	$41.25	85	4.9	1	42.5%	18.3	14.7	$32.19	75	13.6	1	42.5%	12.33	14.00
4222344	$140.78	75	3.9	1	10.5%	18.16	2.7	$119.69	75	14.4	1	10.5%	14.87	2.00
4222352	$43.15	75	3.9	1	35.4%	14.97	6.6	$37.95	75	14.3	1	35.4%	12.35	5.60
4222520	$36.54	105	7.5	1	43.5%	36.43	12.2	$18.19	75	13.8	1	43.5%	16.75	22.00
4222528	$31.34	105	7.5	1	45.5%	32.8	11.3	$18.80	75	14.1	1	45.5%	15.26	14.00
4222576	$39.92	95	6.0	1	43.7%	24.73	17.6	$29.64	75	13.3	1	43.7%	13.77	18.50
4222600	$248.71	75	3.9	1	4.4%	12	1.7	$208.64	75	14.5	1	4.4%	9.99	0.70
4222608	$26.87	105	7.5	3	47.4%	24.92	12.4	$14.44	95	19.7	3	47.4%	17.35	34.10
4222672	$30.91	105	7.5	2	45.1%	31.88	11.2	$15.26	85	17.0	2	45.1%	18.25	26.10
4222680	$45.41	105	6.7	1	45.8%	29.34	28.5	$34.67	85	14.8	1	45.8%	16.95	34.20
4222696	$31.36	105	7.4	1	44.2%	25.81	14.9	$19.40	75	13.3	1	44.2%	12.32	22.70
4222712	$98.60	75	4.0	1	12.9%	14.96	2.4	$83.93	75	14.5	1	12.9%	12.30	1.60
4222736	$64.14	75	3.2	1	44.0%	10.71	22.8	$58.33	95	18.9	1	44.0%	12.67	17.60
4222800	$85.13	75	4.0	1	15.5%	14.94	3.3	$72.68	75	14.5	1	15.5%	12.30	2.40
4222832	$76.67	75	3.9	1	18.7%	15.95	4	$65.89	75	14.3	1	18.7%	13.12	3.20
4222888	$32.02	75	3.9	1	47.3%	11.49	8.3	$27.03	75	14.1	1	47.3%	9.53	7.30
4222960	$102.39	75	3.9	1	12.1%	13.51	3	$88.21	75	14.4	1	12.1%	11.14	2.30
4222976	$27.96	105	7.5	2	45.7%	23.84	13.6	$15.68	95	19.3	2	45.7%	16.61	37.30
4222992	$38.12	85	5.1	1	42.9%	21.35	10	$27.77	75	14.2	1	42.9%	14.27	9.90
4223016	$30.82	105	7.5	4	43.4%	25.82	13.6	$16.76	95	19.4	4	43.4%	17.93	37.20

4223024	$36.55	85	5.1	1	44.3%	20.06	10.7	$27.77	75	14.0	1	44.3%	13.45	11.00
4223152	$26.64	105	7.4	1	47.4%	21.06	15.5	$19.26	75	13.5	1	47.4%	10.27	18.70
4223280	$31.04	85	5.1	1	44.2%	14.75	10.4	$24.55	75	14.1	1	44.2%	10.05	9.50
4223296	$40.07	75	3.8	1	43.9%	13.43	10.2	$34.59	75	14.0	1	43.9%	11.11	8.80
4223304	$26.52	105	7.5	4	44.7%	20.05	14.3	$15.59	95	19.5	4	44.7%	14.10	39.00
4223392	$127.55	75	4.0	1	10.4%	16.56	2	$107.92	75	14.5	1	10.4%	13.59	1.20
4223440	$40.30	85	4.9	1	42.4%	18.31	13.7	$32.72	75	13.7	1	42.4%	12.33	11.80
4223472	$41.69	105	7.1	1	44.8%	35.05	20.5	$26.87	75	12.5	1	44.8%	16.20	29.80
4223540	$28.44	105	7.3	3	48.6%	25.21	15.2	$17.02	95	18.6	3	48.6%	17.52	41.90
4223560	$32.53	105	7.4	1	43.0%	25.82	15.4	$20.73	75	13.4	1	43.0%	12.32	21.70
4223568	$48.99	75	3.8	1	37.3%	16.08	8.9	$43.74	75	14.0	1	37.3%	13.24	8.00
4223584	$29.11	105	7.5	6	43.7%	25.82	11.5	$15.00	95	19.8	6	43.7%	17.93	31.50
4223600	$22.69	105	7.5	1	46.2%	17.13	12.5	$14.98	75	13.7	1	46.2%	8.55	18.80
4223616	$33.54	105	7.4	1	43.5%	29.7	13.9	$21.92	75	13.9	1	43.5%	14.00	15.80
4223688	$50.74	75	3.9	1	33.1%	17.81	6.4	$44.42	75	14.3	1	33.1%	14.65	5.50
4223704	$33.67	75	4.0	1	43.6%	14.94	5.9	$27.78	75	14.4	1	43.6%	12.33	5.00
4223720	$86.82	75	3.8	1	20.5%	17.65	6.3	$75.99	75	14.0	1	20.5%	14.48	5.60
4223744	$31.33	105	7.4	2	44.0%	25.82	14.9	$17.65	95	19.1	2	44.0%	17.91	40.70
4223768	$70.71	75	3.9	1	17.0%	10.94	4.5	$62.07	75	14.3	1	17.0%	9.14	3.70
4223832	$28.93	105	7.5	7	43.8%	25.82	11.3	$14.87	95	19.8	7	43.8%	17.93	31.10
4224000	$25.34	105	7.6	59	46.6%	24.78	10.7	$12.84	95	20.2	59	46.6%	17.27	29.00
4224040	$57.84	75	4.0	1	21.2%	12.62	3.8	$50.47	75	14.5	1	21.2%	10.43	3.00
4224088	$37.20	105	7.3	1	43.6%	33.29	15.4	$25.81	75	13.8	1	43.6%	15.47	14.50
4224160	$32.80	105	7.5	2	43.4%	29.52	13.1	$17.47	85	16.9	2	43.4%	17.04	27.30
4224240	$35.17	105	7.2	1	43.1%	25.84	18.5	$25.76	75	13.3	1	43.1%	12.32	18.30
4224248	$32.03	105	7.4	1	44.4%	26.94	15.5	$22.88	75	13.8	1	44.4%	12.72	14.90
4224304	$33.25	105	7.3	1	43.4%	24.97	17.5	$24.70	75	13.6	1	43.4%	11.95	16.50
4224336	$31.27	75	4.0	1	43.8%	13.12	6.2	$26.57	75	14.5	1	43.8%	10.85	5.10
4224392	$34.05	105	7.4	2	45.7%	32.12	14.5	$18.05	95	19.2	2	45.7%	22.21	40.50
4224432	$39.28	75	3.9	1	43.7%	17.46	7.7	$32.51	75	14.3	1	43.7%	14.36	6.80
4224440	$33.04	105	7.3	2	43.2%	25.82	16	$19.92	95	18.4	2	43.2%	17.91	44.20
4224448	$302.71	75	4.0	1	4.7%	18.5	1.5	$250.84	75	14.5	1	4.7%	15.10	0.60
4224488	$42.68	75	3.8	1	46.3%	18.48	9.1	$33.80	75	14.0	1	40.7%	15.19	8.80
4224536	$32.59	105	7.3	1	42.8%	23.87	17.1	$23.21	75	13.5	1	42.8%	11.47	18.00
4224544	$35.41	105	7.2	1	43.8%	25.38	20.2	$25.65	75	13.2	1	43.8%	12.13	20.90
4224560	$56.06	75	3.9	1	25.8%	14.99	5.4	$48.37	75	14.4	1	25.8%	12.35	4.10
4224664	$44.39	85	5.0	1	42.3%	23.44	12.6	$35.16	75	13.9	1	42.3%	15.58	10.80
4224712	$29.81	105	7.5	4	43.1%	25.82	12.1	$15.50	95	19.9	4	43.1%	17.93	33.00
4224832	$136.84	75	4.0	1	10.6%	19.27	1.4	$115.11	75	14.6	1	10.6%	15.75	0.70
4224856	$36.11	105	7.2	1	46.4%	31	18.4	$22.84	75	12.7	1	46.4%	14.60	28.90
4224948	$34.40	105	7.4	1	45.5%	32.34	14.6	$20.96	75	13.5	1	45.5%	15.07	19.70
4225136	$31.02	85	5.1	1	46.6%	16.29	10.3	$24.57	75	14.0	1	46.6%	11.05	10.30
4225152	$82.38	75	3.9	1	15.9%	13.3	4.4	$71.45	75	14.3	1	15.9%	10.98	3.60
4225168	$89.53	75	3.9	1	17.3%	15.02	5.3	$74.06	75	14.2	1	17.3%	12.36	4.60
4225248	$55.59	75	3.7	1	34.0%	14.97	10.4	$49.78	75	13.8	1	34.0%	12.35	9.50
4225280	$126.62	75	3.6	1	11.4%	10.74	6.4	$113.04	75	13.7	1	11.4%	8.98	5.90
4225360	$25.13	105	7.5	3	45.6%	20.54	12.4	$14.26	95	19.6	3	45.6%	14.42	34.20
4225416	$75.36	75	3.9	1	19.6%	15.01	5.5	$65.47	75	14.2	1	19.6%	12.36	4.70
4225420	$36.89	105	7.0	1	46.8%	23.71	24.9	$27.54	85	15.5	1	46.8%	13.89	30.50
4225424	$26.49	105	7.5	1	44.2%	22.38	11.5	$17.97	75	14.0	1	44.2%	10.84	13.50
4225456	$77.24	75	3.9	1	20.1%	18.21	4	$65.69	75	14.4	1	20.1%	14.93	2.90
4225464	$33.45	105	7.3	2	43.8%	25.82	17.3	$20.88	85	15.7	2	43.8%	15.02	38.20
4225496	$29.45	105	7.5	1	42.7%	25.82	11.1	$16.07	75	13.8	1	42.7%	12.31	20.00
4225568	$51.44	95	6.0	1	41.8%	37.04	16.2	$37.16	75	13.4	1	41.8%	19.96	15.20
4225584	$74.64	75	3.9	1	21.1%	15	5.8	$60.91	75	14.2	1	21.1%	12.36	4.50
4225680	$28.16	105	7.5	1	44.0%	24.53	11.8	$19.10	75	14.1	1	44.0%	11.77	12.10
4225744	$67.11	75	3.8	1	27.8%	19.04	6.8	$57.60	75	14.2	1	27.8%	15.61	5.50

4225752	$28.62	105	7.5	8	44.5%	26.28	11.1	$14.73	95	19.8	8	44.5%	18.24	30.80
4225944	$68.55	75	4.0	1	20.7%	16.5	3.5	$58.34	75	14.5	1	20.7%	13.56	2.40
4226232	$43.49	75	3.8	1	43.4%	14.95	10.9	$37.67	75	13.9	1	43.4%	12.34	9.50
4226280	$30.31	105	7.5	2	43.6%	25.82	13.2	$16.53	85	16.5	2	43.6%	15.01	29.80
4226296	$37.38	95	6.3	1	41.3%	26.75	11.5	$27.53	75	14.1	1	41.3%	14.71	10.50
4226376	$30.19	105	7.5	2	43.0%	25.82	12.3	$15.95	95	19.6	2	43.0%	17.91	33.90
4226397	$30.36	105	7.5	1	43.9%	25.83	13.6	$20.74	75	14.0	1	43.9%	12.32	13.60
4226408	$29.87	105	7.6	2	42.4%	25.82	11.6	$15.25	85	16.9	2	42.4%	15.01	26.40
4226432	$29.79	105	7.6	3	42.7%	25.82	11.8	$14.84	95	20.0	3	42.7%	17.93	31.90
4226488	$46.51	75	3.9	1	35.0%	14.65	7.1	$39.22	75	14.2	1	35.0%	12.08	6.20
4226504	$73.03	75	4.0	1	15.6%	12.3	2.7	$62.61	75	14.5	1	15.6%	10.16	1.70
4226512	$33.60	95	6.4	2	44.1%	28.32	9.5	$16.62	75	13.8	1	44.1%	15.55	21.40
4226520	$66.84	75	4.0	1	22.8%	19.44	2.7	$56.77	75	14.6	1	22.8%	15.93	1.80
4226560	$34.41	105	7.4	1	47.4%	36.98	12.5	$20.02	75	13.8	1	47.4%	17.00	15.80
4226592	$34.70	105	7.5	5	44.3%	37.89	10	$15.38	95	20.2	5	44.3%	25.82	27.60
4226704	$71.17	75	3.9	1	22.1%	16.99	5.3	$60.70	75	14.2	1	22.1%	13.97	4.00
4226760	$97.99	75	3.9	1	12.2%	12.32	3.4	$84.94	75	14.3	1	12.2%	10.17	2.70
4226812	$688.87	75	1.3	1	18.2%	15.85	45.1	$603.29	75	7.4	1	18.2%	13.16	40.10
4226824	$49.49	75	3.6	1	43.9%	14.41	15	$43.43	75	13.5	1	43.9%	11.90	12.90
4226872	$33.18	105	7.3	3	43.1%	25.82	16	$19.91	95	18.4	3	43.1%	17.91	44.00
4226880	$32.27	105	7.5	2	45.2%	31.89	12	$15.91	95	20.1	2	45.2%	22.07	31.40
4226960	$28.78	105	7.3	1	48.6%	24.79	16.1	$20.54	75	13.5	1	48.6%	11.88	16.90
4226984	$106.69	75	3.9	1	14.3%	18.6	3.2	$90.49	75	14.4	1	14.3%	15.24	2.20
4227008	$28.82	105	7.5	1	44.3%	25.81	11.9	$15.60	75	13.8	1	44.3%	12.31	22.30
4227024	$101.57	75	3.9	1	15.2%	18.01	4	$86.33	75	14.3	1	15.2%	14.76	2.90
4227112	$96.17	75	3.9	1	14.9%	17.04	3.2	$81.83	75	14.4	1	14.9%	13.98	2.20
4227120	$38.28	105	7.1	3	44.4%	27.39	21.1	$24.74	95	17.2	3	44.4%	18.86	56.80
4227130	$30.22	95	6.3	1	43.6%	21.92	9.7	$20.75	75	14.2	1	43.6%	12.32	9.70
4227207	$30.36	105	7.5	2	44.6%	27.24	12.8	$16.89	85	16.2	2	44.6%	15.68	30.10
4227232	$29.04	105	7.5	2	47.2%	31	10.7	$14.80	85	17.1	2	47.2%	17.90	22.70
4227312	$176.09	75	4.0	1	5.9%	11.77	1.3	$147.30	75	14.6	1	5.9%	9.81	0.30
4227360	$59.99	75	3.9	1	22.1%	13.74	4.4	$52.34	75	14.4	1	22.1%	11.34	3.60
4227456	$29.12	105	7.4	3	45.9%	22.48	16.7	$18.06	95	18.8	3	45.9%	15.71	45.10
4227552	$35.62	105	7.2	7	44.4%	28.18	18.6	$21.84	95	18.0	7	44.4%	19.44	50.60
4227576	$85.15	75	4.0	1	15.3%	15.02	3.1	$73.38	75	14.5	1	15.3%	12.36	2.30
4227648	$37.03	85	5.0	1	42.3%	17.17	11.8	$30.02	75	13.8	1	42.3%	11.60	10.00
4227656	$45.55	85	4.8	1	41.0%	18.31	16.6	$37.37	75	13.4	1	41.0%	12.33	14.40
4227672	$84.27	75	3.9	1	17.6%	16.23	4.5	$72.59	75	14.3	1	17.6%	13.34	3.70
4227688	$46.72	75	3.9	1	29.5%	13.26	5.8	$40.57	75	14.3	1	29.5%	10.95	4.50
4227696	$50.77	75	3.9	1	31.8%	17.49	5.8	$44.34	75	14.4	1	31.8%	14.38	4.90
4227712	$33.01	95	6.2	1	43.6%	21.31	13.4	$24.16	75	13.9	1	43.6%	12.00	13.80
4227744	$27.90	105	7.5	2	49.3%	31.43	10.8	$14.18	85	17.1	2	49.3%	18.02	23.20
4227760	$32.73	105	7.4	1	41.8%	25.85	14.5	$23.70	75	13.9	1	41.8%	12.32	13.60
4227784	$36.10	105	7.4	1	44.1%	34.79	13.3	$23.12	75	13.9	1	44.1%	16.09	13.50
4227928	$33.89	105	7.0	1	46.8%	21.08	23	$27.18	75	12.7	1	46.8%	10.27	22.40
4227936	$56.26	75	3.7	1	33.6%	16.46	9.1	$49.97	75	13.9	1	33.6%	13.55	8.20
4227968	$235.40	75	3.9	1	5.7%	15.79	2.6	$196.74	75	14.3	1	5.7%	12.94	1.60
4228014	$93.60	75	3.7	1	17.0%	12.58	7.7	$82.81	75	13.8	1	17.0%	10.39	6.90
4228128	$93.27	75	3.9	1	15.5%	15.02	5	$81.24	75	14.2	1	15.5%	12.36	4.20
4228144	$29.96	105	7.5	6	43.9%	25.82	13	$16.07	95	19.5	6	43.9%	17.93	35.50
4228280	$28.40	105	7.4	1	45.6%	22.62	15.1	$21.26	75	13.8	1	45.6%	10.94	14.20
4228328	$27.39	105	7.4	1	48.4%	25.22	13.7	$18.56	75	13.8	1	48.4%	12.06	16.10
4228376	$43.41	95	5.8	1	44.0%	21.94	21.8	$34.97	75	12.8	1	44.0%	12.33	21.30
4228456	$28.34	105	7.4	1	44.4%	21.36	15.1	$17.99	85	16.4	1	44.4%	12.60	26.20
4228488	$228.13	75	3.9	1	5.7%	15.11	2.5	$190.72	75	14.4	1	5.7%	12.40	1.50
4228520	$68.89	75	3.9	1	20.4%	14.1	5.1	$60.28	75	14.2	1	20.4%	11.62	4.30
4228600	$37.44	105	7.2	1	43.8%	28.01	20.4	$25.58	75	12.6	1	43.8%	13.21	29.50

4228720	$28.76	105	7.4	1	46.4%	24.64	14.5	$17.34	75	13.2	1	46.4%	11.81	26.70
4228768	$229.59	75	4.0	1	5.0%	14.42	0.8	$209.72	75	14.6	1	5.0%	11.84	1.86
4228824	$139.34	75	3.9	1	7.6%	10.72	2.4	$118.01	75	14.4	1	7.6%	8.95	1.40
4228828	$65.41	75	3.6	1	32.8%	14.98	13.6	$20.44	75	13.9	1	45.1%	14.69	16.30
4228832	$32.94	105	7.5	1	45.1%	31.45	13.1	$57.27	75	13.4	1	32.8%	12.35	11.60
4228960	$27.83	105	7.5	4	43.7%	25.82	9.6	$13.36	95	20.0	4	43.7%	17.93	26.60
4229000	$69.77	75	3.7	1	25.9%	14.99	9.1	$60.42	75	13.9	1	25.9%	12.35	7.50
4229040	$33.98	105	7.3	2	44.3%	28.01	16.3	$20.41	85	15.4	2	44.3%	16.14	38.20
4229088	$42.94	85	4.9	1	43.8%	22.07	13.6	$34.33	75	13.7	1	43.8%	14.71	11.70
4229096	$33.35	105	7.3	2	43.7%	25.82	17	$20.43	85	15.5	2	43.7%	15.01	39.30
4229232	$37.33	105	7.3	1	46.3%	34.51	17.5	$22.23	75	12.9	1	46.3%	15.97	31.50
4229264	$33.55	95	6.3	1	45.3%	26.93	10.5	$24.60	75	14.2	1	45.3%	14.80	9.60
4229392	$625.06	75	4.0	1	1.9%	15.24	0.4	$577.18	75	14.6	1	1.9%	12.45	1.87
4229432	$34.01	105	7.5	2	43.4%	31.46	13.1	$17.11	95	19.9	2	43.4%	21.79	36.10
4229496	$58.70	85	4.6	1	43.6%	25.91	20.3	$47.50	75	12.8	1	43.6%	17.15	17.80
4229512	$108.09	75	3.8	1	15.6%	16.63	5.9	$92.09	75	14.1	1	15.6%	13.65	4.60
4229568	$91.79	75	3.9	1	15.3%	15.02	4.4	$78.36	75	14.3	1	15.3%	12.36	3.20
4229592	$151.73	75	3.7	1	11.6%	17.17	6	$131.59	75	13.9	1	11.6%	14.07	5.40
4229632	$201.07	75	3.9	1	6.8%	13.12	4	$170.32	75	14.1	1	6.8%	10.80	2.90
4229680	$31.88	105	7.5	1	46.0%	32.11	12.1	$19.52	75	14.1	1	46.0%	14.98	14.60
4229720	$30.04	105	7.5	2	42.6%	25.82	12	$15.06	95	20.0	2	42.6%	17.91	32.50
4229732	$77.52	75	3.9	1	21.7%	17.1	5.6	$63.36	75	14.2	1	21.7%	14.05	4.40
4229760	$35.25	95	6.2	1	43.2%	21.93	14.9	$26.92	75	13.7	1	43.2%	12.33	14.50
4229800	$31.57	105	7.5	6	44.0%	29.02	12.6	$16.36	95	19.6	6	44.0%	19.92	34.80
4229808	$27.89	105	7.6	4	43.3%	25.82	10.7	$14.00	95	20.1	4	43.3%	17.93	29.10
4230013	$35.18	105	7.1	1	46.8%	25.07	21.4	$23.89	75	12.1	1	46.8%	11.99	34.00
4230016	$48.73	75	3.8	1	35.1%	14.97	8.2	$43.16	75	14.1	1	35.1%	12.35	7.20
4230096	$145.86	75	3.9	1	10.1%	15.06	4	$119.70	75	14.2	1	10.1%	12.38	3.40
4230128	$46.51	75	3.8	1	40.2%	17.7	8.2	$38.54	75	14.2	1	40.2%	14.55	6.70
4230136	$112.47	75	3.9	1	12.0%	15.05	3.5	$96.83	75	14.3	1	12.0%	12.38	2.80
4230192	$76.53	75	3.7	1	24.3%	14.99	9.4	$68.31	75	13.6	1	24.3%	12.35	8.70
4230200	$33.23	85	4.9	1	48.7%	14.55	15	$26.68	75	13.4	1	48.7%	9.92	14.30
4230224	$143.02	75	4.0	1	8.3%	14.23	1.7	$120.01	75	14.6	1	8.3%	11.70	0.70
4230280	$68.05	75	3.9	1	20.9%	15.75	4	$58.22	75	14.4	1	20.9%	12.97	2.90
4230435	$31.52	105	7.3	1	43.6%	25.82	14.2	$19.61	75	12.9	1	43.6%	12.32	26.40
4230472	$94.74	75	3.8	1	20.6%	21.03	6.2	$80.67	75	14.1	1	20.6%	17.19	4.90
4230512	$58.91	75	4.0	1	21.4%	14.23	3	$50.22	75	14.6	1	21.4%	11.74	1.90
4230528	$66.74	75	3.8	1	26.9%	16.29	7.9	$57.71	75	14.0	1	26.9%	13.40	6.50
4230600	$54.83	75	3.6	1	39.4%	16.66	12.5	$49.21	75	13.5	1	39.4%	13.70	11.60
4230704	$54.25	75	3.9	1	29.1%	14.14	6.7	$44.49	75	14.2	1	29.1%	11.67	5.30
4230728	$35.99	75	3.9	1	43.0%	15.36	6.9	$31.39	75	14.4	1	43.0%	12.67	5.50
4230896	$33.96	105	7.3	1	43.3%	25.82	17.7	$20.99	85	16.0	1	43.3%	15.02	34.10
4231038	$40.17	85	5.0	1	39.7%	18.31	11.7	$32.58	75	13.9	1	39.7%	12.33	10.00
4231082	########	75	3.9	1	0.9%	13.09	0.8	########	75	14.6	1	0.9%	10.83	1.86
4231088	$85.28	75	3.9	1	16.1%	15.02	4	$73.42	75	14.4	1	16.1%	12.36	3.20
4231120	$37.31	105	7.4	1	43.3%	34.28	14.4	$22.89	75	13.7	1	43.3%	15.88	18.00
4231192	$102.21	75	4.0	1	14.0%	17.91	2.5	$86.44	75	14.5	1	14.0%	14.68	1.50
4231200	$21.78	105	7.6	15	44.0%	20.16	7.7	$10.81	95	20.5	15	44.0%	14.17	21.20
4231208	$99.09	75	3.5	1	21.5%	15	12.5	$89.04	85	16.5	1	21.5%	15.08	8.90
4231256	$29.25	105	7.5	5	43.8%	30.25	8.5	$13.48	95	20.1	5	43.8%	20.95	24.00
4231328	$27.41	105	7.5	4	45.4%	25.96	10.5	$13.48	95	19.9	4	45.4%	18.04	28.90
4231368	$28.58	105	7.4	1	45.4%	23.83	13.9	$17.69	75	13.4	1	45.4%	11.47	21.50
4231536	$189.96	75	4.0	1	7.3%	18.08	1.4	$158.72	75	14.5	1	7.3%	14.79	0.50
4231568	$33.45	95	6.2	1	43.7%	21.93	13.3	$25.25	75	13.9	1	43.7%	12.33	12.80
4231592	$61.78	75	3.8	1	27.2%	15.06	7.4	$53.44	75	14.1	1	27.2%	12.41	6.00
4231656	$24.82	105	7.5	4	45.5%	21.46	10.9	$13.47	95	19.7	4	45.5%	15.05	30.30
4231716	$33.10	105	7.3	1	43.8%	25.82	16.8	$82.54	75	14.0	1	18.2%	13.89	5.40

4231840	$255.65	75	4.0	1	4.4%	13.66	1.2	$212.93	75	14.6	1	4.4%	11.22	0.30
4232024	$35.20	105	7.2	1	43.6%	25.82	19.2	$23.84	75	12.6	1	43.6%	12.32	29.60
4232032	$49.86	75	4.0	1	29.5%	16	5	$43.00	75	14.4	1	29.5%	13.17	3.80
4232056	$31.39	105	7.5	1	42.8%	25.82	14	$21.17	75	13.9	1	42.8%	12.32	15.90
4232080	$30.37	95	6.3	1	44.7%	22.44	10.3	$21.99	75	14.2	1	44.7%	12.59	9.30
4232120	$32.29	105	7.4	2	44.0%	25.82	16	$19.51	85	15.8	2	44.0%	15.01	36.20
4232320	$80.28	75	3.9	1	17.0%	15.02	3.8	$68.77	75	14.4	1	17.0%	12.36	2.90
4232384	$174.06	75	3.7	1	9.0%	13.48	6.3	$149.37	75	13.8	1	9.0%	11.10	5.00
4232448	$27.55	105	7.6	10	43.2%	25.82	10.1	$13.67	95	20.1	10	43.2%	17.93	27.60
4232600	$34.24	85	5.1	1	48.3%	22.48	9.2	$26.14	75	14.1	1	48.3%	14.99	9.10
4232616	$31.56	105	7.4	4	43.7%	25.82	14.7	$17.74	95	19.0	4	43.7%	17.93	40.20
4232656	$117.83	75	3.9	1	11.1%	13.99	3.6	$101.81	75	14.2	1	11.1%	11.53	2.90
4232688	$38.04	75	3.9	1	42.2%	14.79	8.2	$33.30	75	14.2	1	42.2%	12.21	6.70
4232800	$27.80	105	7.6	23	43.4%	25.82	10.7	$13.91	95	20.1	23	43.4%	17.93	29.00
4232864	$347.93	75	4.0	1	3.5%	16.2	0.5	$318.56	75	14.7	1	3.5%	13.26	1.87
4232896	$42.32	75	3.8	1	38.8%	12.59	9	$37.99	75	14.0	1	38.8%	10.42	8.10
4232936	$115.36	75	3.9	1	12.8%	14.81	4.1	$93.84	75	14.2	1	12.8%	12.18	3.40
4232976	$203.73	75	3.9	1	6.3%	14.63	2.7	$170.75	75	14.3	1	6.3%	12.01	1.70
4233000	$34.24	105	7.2	2	47.6%	31	17.1	$20.05	85	15.5	2	47.6%	17.91	40.10
4233024	$41.67	75	3.9	1	43.8%	16.63	8.7	$33.99	75	14.2	1	43.8%	13.70	7.40
4233072	$31.96	95	6.2	1	45.1%	19.57	14.7	$25.34	75	13.7	1	45.1%	11.10	13.70
4233080	$32.83	95	6.2	1	44.1%	22.98	11.9	$25.05	75	14.0	1	44.1%	12.86	11.00
4233088	$27.58	105	7.6	4	43.2%	25.82	10.1	$13.62	95	20.1	4	43.2%	17.93	27.60
4233112	$30.85	105	7.5	1	43.8%	25.82	14.3	$20.85	75	13.9	1	43.8%	12.32	16.50
4233154	$91.65	75	3.9	1	14.5%	15.03	3.3	$78.00	75	14.4	1	14.5%	12.36	2.20
4233184	$56.27	75	3.8	1	28.4%	14.15	6.9	$48.64	75	14.1	1	28.4%	11.68	5.50
4233200	$33.93	85	5.0	1	45.8%	16.88	12	$27.61	75	13.9	1	45.8%	11.43	10.30
4233216	$54.80	75	3.8	1	33.0%	16.97	7.7	$48.33	75	14.1	1	33.0%	13.95	6.80
4233312	$285.21	75	4.0	1	4.6%	17.26	1	$235.85	75	14.6	1	4.6%	14.11	0.10
4233408	$27.75	105	7.6	15	48.6%	32.1	9.2	$12.73	95	20.4	15	48.6%	22.21	25.80
4233504	$64.74	75	4.0	1	20.7%	15	3.4	$55.99	75	14.5	1	20.7%	12.36	2.60
4233528	$128.02	75	4.0	1	11.0%	17.38	2.3	$108.33	75	14.5	1	11.0%	14.25	1.50
4233576	$53.68	75	3.6	1	42.3%	16.85	14.1	$46.81	75	13.5	1	42.3%	13.86	12.00
4233592	$34.87	95	6.4	1	40.1%	25.22	10.2	$25.37	75	14.3	1	40.1%	14.02	9.20
4233632	$98.81	75	3.9	1	14.5%	15.03	4.7	$84.52	75	14.2	1	14.5%	12.37	3.50
4233672	$43.89	75	3.5	1	45.2%	9.45	16.3	$38.76	75	13.3	1	45.2%	7.86	14.00
4233744	$28.64	105	7.6	3	43.7%	25.82	11	$14.10	95	20.0	3	43.7%	17.93	29.90
4233772	$29.84	105	7.3	5	47.1%	23.97	17	$18.77	95	18.3	5	47.1%	16.72	46.80
4233840	$69.59	75	3.9	1	19.4%	14.03	4.4	$60.00	75	14.3	1	19.4%	11.57	3.50
4234008	$71.02	75	3.8	1	23.9%	14.99	7.6	$61.21	75	14.0	1	23.9%	12.35	6.10
4234048	$46.04	75	3.9	1	33.9%	16.35	6	$40.24	75	14.4	1	33.9%	13.47	5.00
4234064	$24.27	105	7.4	14	45.7%	17.13	14.1	$15.75	95	18.8	14	45.7%	12.14	39.20
4234080	$84.62	75	3.8	1	20.8%	17.53	6.3	$73.85	75	14.1	1	20.8%	14.40	5.50
4234144	$34.72	105	7.2	7	43.9%	25.82	18.7	$22.00	95	17.8	7	43.9%	17.93	51.00
4234256	$39.47	75	3.7	1	44.5%	10.79	12.4	$34.45	75	13.7	1	44.5%	8.95	10.80
4234308	$35.27	105	7.2	1	47.3%	30.43	18.8	$25.57	75	13.4	1	47.3%	14.35	17.80
4234592	$38.58	95	6.2	1	44.1%	29.86	12	$26.59	75	13.9	1	44.1%	16.43	12.40
4234664	$33.00	105	7.4	1	43.4%	25.83	16.6	$23.03	75	13.7	1	43.4%	12.32	17.20
4234776	$32.03	105	7.5	1	45.1%	31.67	11.4	$21.12	75	14.0	1	45.1%	14.79	11.30
4234784	$38.95	85	4.9	1	43.5%	17.8	14.1	$30.90	75	13.7	1	43.5%	12.01	13.10
4235120	$30.14	105	7.5	2	44.0%	25.82	13.2	$16.62	85	16.5	2	44.0%	15.01	28.60
4235172	$43.56	95	5.8	1	41.8%	20.98	20.2	$35.56	75	12.8	1	41.8%	11.83	19.40
4235224	$27.52	105	7.5	4	44.8%	24.93	11.1	$14.31	95	19.9	4	44.8%	17.35	30.80
4235364	$31.88	105	7.3	4	45.3%	25.22	17	$19.70	95	18.3	4	45.3%	17.54	46.80
4235408	$24.70	105	7.5	1	44.2%	17.74	13.5	$18.46	75	14.0	1	44.2%	8.81	13.70
4235424	$34.17	105	7.5	1	43.4%	34.28	11.9	$18.34	75	14.0	1	43.4%	15.87	19.30
4235448	$40.37	95	5.9	1	46.4%	26.21	18.9	$29.63	75	13.0	1	46.4%	14.53	20.50

4235488	$153.41	75	4.0	1	7.1%	12.09	1.9	$128.33	75	14.5	1	7.1%	9.97	0.90
4235520	$26.69	105	7.6	5	46.3%	27.39	8.8	$12.50	95	20.0	5	46.3%	18.89	24.70
4235528	$36.79	75	3.9	1	44.2%	14.94	8.4	$30.15	75	14.1	1	44.2%	12.33	8.40
4235576	$151.70	75	4.0	1	7.0%	12.41	1.3	$126.79	75	14.6	1	7.0%	10.23	0.40
4235608	$42.95	75	3.9	1	35.2%	11.95	7.7	$38.32	75	14.2	1	35.2%	9.90	6.70
4235624	$86.36	75	3.9	1	17.0%	15.51	4.9	$74.66	75	14.2	1	17.0%	12.76	4.10
4235632	$58.25	75	3.9	1	28.2%	14.98	7	$47.85	75	14.2	1	28.2%	12.35	5.60
4235648	$109.57	75	4.0	1	11.8%	16.08	1.8	$93.04	75	14.6	1	11.8%	13.21	1.10
4235728	$32.90	105	7.3	1	43.2%	23.45	18	$22.84	75	13.1	1	43.2%	11.31	23.90
4235800	$30.86	105	7.4	7	43.2%	25.82	13.4	$16.80	95	19.3	7	43.2%	17.93	36.70
4235872	$38.44	75	3.8	1	41.6%	12.05	9	$33.73	75	14.1	1	41.6%	9.97	7.40
4235888	$32.10	105	7.5	1	45.0%	32.57	10.6	$16.05	75	13.6	1	45.0%	15.15	20.50
4235896	$28.52	85	5.1	1	43.6%	14.35	9.3	$22.50	75	14.3	1	43.6%	9.81	8.40
4235928	$39.40	75	3.9	1	40.7%	12.59	8.6	$34.58	75	14.1	1	40.7%	10.42	7.10
4235960	$52.77	75	3.9	1	35.2%	21.59	6	$45.78	75	14.4	1	35.2%	17.67	5.00
4236096	$28.94	105	7.6	1	45.2%	31.44	8.7	$16.17	75	14.3	1	45.2%	14.69	11.10
4236152	$34.80	95	6.2	1	45.2%	26.37	12	$25.17	75	14.0	1	45.2%	14.61	11.70
4236160	$30.41	105	7.4	1	44.4%	25.38	14.4	$21.06	75	13.8	1	44.4%	12.13	16.10
4236192	$42.52	75	3.9	1	37.3%	14.97	7.7	$36.89	75	14.3	1	37.3%	12.34	6.20
4236232	$31.13	105	7.5	2	43.4%	25.82	14.2	$17.60	85	16.4	2	43.4%	15.01	32.70
4236240	$36.53	105	7.3	1	44.0%	31.67	16.4	$24.94	75	13.6	1	44.0%	14.80	16.40
4236288	$92.25	75	4.0	1	14.8%	16.33	2.9	$78.14	75	14.5	1	14.8%	13.43	1.80
4236352	$68.17	75	3.8	1	24.5%	14.99	7.2	$58.63	75	14.0	1	24.5%	12.35	5.70
4236368	$29.89	105	7.6	5	44.5%	29.02	10.6	$14.77	95	19.9	5	44.5%	19.92	29.30
4236568	$34.63	85	4.9	1	46.7%	15.98	13.7	$27.58	75	13.6	1	40.1%	10.84	12.70
4236576	$30.09	105	7.5	1	43.2%	25.82	12.4	$20.13	75	14.0	1	43.2%	12.32	13.80
4236592	$63.97	75	3.9	1	30.4%	23.74	5.4	$55.30	75	14.5	1	30.4%	19.56	4.50
4236616	$66.22	75	3.8	1	25.9%	13.94	8.7	$57.00	75	13.9	1	25.9%	11.50	7.10
4236640	$36.05	85	5.1	1	41.1%	16.89	10.7	$29.41	75	14.1	1	41.1%	11.43	9.10
4236712	$133.22	75	4.0	1	9.3%	15.07	1.8	$113.39	75	14.6	1	9.3%	12.38	1.10
4236768	$42.21	105	7.0	1	44.4%	30.43	22.7	$27.95	75	12.1	1	44.4%	14.34	34.10
4236816	$21.24	105	7.6	7	45.4%	19.41	8.8	$10.91	95	20.5	7	45.4%	13.68	23.90
4236888	$39.54	95	5.8	1	47.7%	19.37	23.5	$32.76	75	12.7	1	47.7%	11.00	23.10
4236904	$32.46	105	7.2	4	48.9%	25.5	20.9	$21.74	95	17.6	4	48.9%	17.74	56.50
4236944	$43.56	105	6.8	1	44.5%	21.93	30.3	$34.10	85	14.8	1	44.5%	12.91	36.60
4237000	$31.00	105	7.5	1	43.9%	30.25	11.6	$16.64	75	14.0	1	43.9%	14.25	20.30
4237008	$42.57	75	3.8	1	45.4%	18.12	8.7	$34.19	75	14.0	1	45.4%	14.90	8.20
4237016	$47.69	75	3.7	1	43.5%	14.95	13.3	$40.14	75	13.6	1	43.5%	12.34	12.40
4237024	$330.60	75	4.0	1	4.2%	18.16	1.3	$273.67	75	14.5	1	4.2%	14.83	0.40
4237192	$50.18	75	3.8	1	34.7%	15.13	8.3	$44.58	75	14.0	1	34.7%	12.47	7.40
4237208	$30.96	105	7.5	2	43.8%	27.55	13	$16.70	85	16.7	2	43.8%	15.87	28.20
4237304	$46.89	75	3.9	1	32.2%	14.97	6.3	$41.33	75	14.3	1	32.2%	12.35	5.40
4237496	$113.80	75	3.9	1	9.9%	11.91	2.7	$98.26	75	14.4	1	9.9%	9.83	2.00
4237545	$167.51	75	4.0	1	9.9%	23.29	1.1	$140.20	75	14.7	1	9.9%	19.14	0.30
4237584	$31.31	105	7.4	1	44.1%	25.82	14.8	$19.11	75	13.1	1	44.1%	12.31	28.20
4237640	$35.00	95	6.2	1	43.5%	21.93	14.9	$26.37	75	13.7	1	43.5%	12.33	14.90
4237656	$84.46	75	3.9	1	17.3%	16.81	3.6	$72.29	75	14.4	1	17.3%	13.81	2.80
4237696	$47.41	75	3.9	1	35.2%	15.05	7.4	$39.87	75	14.2	1	35.2%	12.40	6.40
4237728	$96.47	75	3.9	1	14.9%	17.03	3.3	$82.16	75	14.4	1	14.9%	13.98	2.30
4237784	$26.98	105	7.6	7	44.3%	24.1	10.8	$13.57	95	20.0	7	44.3%	16.81	29.70
4237792	$232.56	75	4.0	1	5.8%	18.23	0.6	$210.22	75	14.7	1	5.8%	14.90	1.87
4237880	$86.92	75	4.0	1	13.6%	12.89	3	$48.03	75	14.3	1	26.7%	12.35	4.60
4237944	$55.48	75	3.9	1	26.7%	14.98	5.9	$73.58	75	14.5	1	13.6%	10.63	1.90
4237955	$37.48	105	7.2	7	44.0%	29.88	18.5	$22.79	95	17.8	7	44.0%	20.67	51.10
4238000	$25.89	105	7.6	3	43.1%	25.82	7.6	$11.75	95	20.6	3	43.1%	17.92	20.40
4238048	$47.24	75	3.6	1	40.3%	11.32	13.5	$43.20	75	13.4	1	40.3%	9.38	12.60
4238096	$33.60	105	7.5	1	45.4%	33.03	12.9	$19.80	75	13.8	1	45.4%	15.37	17.10

4238104	$39.03	85	4.8	1	44.8%	14.76	17.2	$32.54	75	13.3	1	44.8%	10.06	14.90
4238128	$28.40	105	7.5	2	44.2%	22.13	14.5	$17.26	85	16.3	2	44.2%	13.02	32.10
4238152	$146.49	75	3.9	1	10.2%	18.17	3	$124.73	75	14.3	1	10.2%	14.87	2.30
4238160	$28.19	105	7.4	3	46.7%	24.1	14.5	$16.22	95	19.1	3	46.7%	16.79	39.90
4238200	$36.19	105	7.1	2	46.8%	30.07	19.7	$22.40	95	17.6	2	46.8%	20.79	53.80
4238240	$64.80	75	3.8	1	24.7%	12.07	8.7	$56.31	75	13.9	1	24.7%	9.99	7.10
4238248	$23.87	105	7.4	2	48.0%	18.55	14.2	$15.01	95	19.5	2	48.0%	13.10	31.80
4238288	$24.76	105	7.6	17	44.4%	22.96	9.9	$14.38	95	19.5	6	46.0%	16.05	33.20
4238392	$159.00	75	3.9	1	9.4%	18.41	2.7	$135.06	75	14.4	1	9.4%	15.06	2.00
4238400	$37.08	85	5.0	1	43.2%	18.3	11.7	$30.11	75	13.9	1	43.2%	12.33	10.00
4238528	$193.38	75	4.0	1	6.9%	17.22	1.4	$161.72	75	14.6	1	6.9%	14.09	0.50
4238640	$76.39	75	4.0	1	20.3%	20.28	2.3	$64.87	75	14.6	1	20.3%	16.60	1.50
4238688	$30.20	105	7.4	2	49.4%	30.62	13.6	$16.42	85	16.2	2	49.4%	17.68	32.00
4238744	$65.34	75	3.9	1	24.7%	17.84	5.4	$56.22	75	14.3	1	24.7%	14.65	4.20
4238768	$117.56	75	4.0	1	12.5%	18.86	2.1	$99.76	75	14.5	1	12.5%	15.45	1.30
4239056	$48.48	75	4.0	1	31.6%	18.4	3.8	$41.53	75	14.6	1	31.6%	15.11	2.70
4239224	$149.51	75	3.9	1	9.0%	15.07	3.3	$126.24	75	14.3	1	9.0%	12.38	2.20
4239256	$29.47	105	7.5	1	43.6%	25.82	12.1	$17.35	75	13.9	1	43.6%	12.32	19.10
4239272	$33.74	105	7.3	1	43.5%	25.82	17.2	$23.75	75	13.3	1	43.5%	12.32	20.20
4239280	$27.66	105	7.5	3	44.2%	22.48	12.9	$15.54	95	19.3	3	44.2%	15.71	35.50
4239336	$59.64	75	3.6	1	32.4%	13.72	11.9	$52.07	75	13.6	1	32.4%	11.33	10.10
4239352	$26.56	105	7.6	3	43.3%	25.82	8.7	$12.66	95	20.3	3	43.3%	17.93	23.80
4239504	$90.26	75	3.8	1	16.7%	14.18	5.3	$74.68	75	14.1	1	16.7%	11.68	4.60
4239512	$35.99	85	4.9	1	48.8%	19.71	13.4	$28.87	75	13.7	1	48.8%	13.22	11.90
4239736	$30.92	105	7.4	12	42.5%	25.82	12.6	$16.60	95	19.3	12	42.5%	17.93	34.80
4239784	$28.73	105	7.6	10	45.1%	31.88	7.8	$12.51	95	20.7	10	45.1%	22.08	21.60
4239944	$164.41	75	3.7	1	10.0%	15.07	6.3	$144.33	75	13.8	1	10.0%	12.38	5.70
4239960	$479.14	75	3.8	1	4.3%	28.44	2.3	$391.31	75	14.2	1	4.3%	22.86	1.30
4240016	$102.45	75	4.0	1	14.0%	18.01	2.5	$86.63	75	14.5	1	14.0%	14.76	1.50
4240040	$31.45	95	6.3	2	44.5%	25.18	10.1	$16.14	85	16.8	2	44.5%	17.14	26.20
4240136	$193.90	75	4.0	1	7.1%	17.32	1.8	$162.02	75	14.5	1	7.1%	14.18	0.80
4240272	$30.33	95	6.3	1	42.4%	18.62	11.7	$23.84	75	14.0	1	42.4%	10.60	10.80
4240360	$40.57	75	3.9	1	32.4%	12.38	5.5	$35.67	75	14.4	1	32.4%	10.24	4.60
4240400	$35.48	75	3.9	1	40.2%	11.79	8	$31.07	75	14.2	1	40.2%	9.77	6.50
4240432	$62.32	75	3.9	1	26.0%	16.97	6.2	$53.77	75	14.2	1	26.0%	13.96	4.90
4240464	$46.86	75	3.7	1	44.2%	16.53	11.9	$39.90	75	13.8	1	44.2%	13.62	10.60
4240584	$32.66	105	7.5	1	45.9%	32.56	12.6	$17.49	75	13.6	1	45.9%	15.16	22.30
4240608	$32.39	105	7.4	3	43.6%	25.82	15.8	$18.67	95	18.8	3	43.6%	17.93	43.20
4240656	$29.70	105	7.5	2	44.2%	25.81	12.7	$15.95	95	19.4	2	44.2%	17.91	34.90
4240680	$68.25	75	3.8	1	25.1%	15.57	7.2	$60.15	75	14.0	1	25.1%	12.82	6.40
4240744	$62.47	75	4.0	1	21.0%	14.45	3.6	$53.44	75	14.5	1	21.0%	11.91	2.50
4240848	$35.29	105	7.2	1	45.3%	30.62	16.5	$25.22	75	13.6	1	45.3%	14.43	15.60
4240948	$121.36	75	3.9	1	9.9%	12.28	3.3	$105.72	75	14.3	1	9.9%	10.14	2.70
4240960	$31.30	105	7.3	1	46.6%	25.81	17.2	$20.79	75	13.1	1	46.6%	12.32	25.90
4240981	$34.05	105	7.4	1	41.2%	25.86	15.6	$24.67	75	13.8	1	41.2%	12.32	14.60
4240982	$39.70	105	6.9	1	41.3%	20.3	24.5	$33.45	85	15.7	1	41.3%	12.01	23.60
4240988	$33.93	105	7.3	1	43.4%	25.82	17.7	$22.09	75	13.0	1	43.4%	12.32	28.10
4240992	$30.86	105	7.3	1	45.7%	24.64	16.5	$20.45	75	13.1	1	45.7%	11.82	23.50
4241080	$37.03	95	6.2	1	45.4%	27.96	13.4	$27.61	75	13.9	1	45.4%	15.37	12.40
4241099	$37.93	105	7.1	1	45.0%	25.81	22.5	$25.31	85	14.7	1	45.0%	15.02	44.00
4241104	$55.75	75	3.8	1	38.9%	20.65	9.9	$48.06	75	14.0	1	38.9%	16.93	8.20
4241192	$38.03	95	6.1	1	40.6%	21.95	15.1	$29.71	75	13.6	1	40.6%	12.33	14.20
4241216	$27.26	105	7.6	23	43.3%	25.82	9.9	$13.25	95	20.4	23	43.3%	17.93	26.60
4241264	$156.47	75	3.9	1	8.4%	15.07	2.9	$132.36	75	14.3	1	8.4%	12.39	1.90
4241272	$131.06	75	4.0	1	9.4%	15.65	1.3	$110.50	75	14.6	1	9.4%	12.85	0.50
4241304	$31.98	105	7.4	1	43.2%	25.82	14.7	$20.89	75	13.5	1	43.2%	12.32	19.40
4241336	$57.94	75	3.7	1	31.2%	15.06	9.1	$50.17	75	13.9	1	31.2%	12.41	7.50

4241376	$46.20	75	3.8	1	34.5%	11.85	8.9	$41.43	75	14.0	1	34.5%	9.81	7.90
4241392	$38.83	85	5.1	1	39.2%	18.31	10.3	$31.33	75	14.1	1	43.6%	12.33	8.70
4241416	$47.92	75	3.8	1	37.9%	14.97	9.8	$41.73	75	14.0	1	37.9%	12.34	8.10
4241432	$29.01	105	7.5	7	43.6%	25.82	11.4	$14.88	95	19.9	7	43.6%	17.93	31.10
4241440	$28.29	105	7.6	4	43.0%	25.82	11.2	$14.19	95	20.2	4	43.0%	17.93	30.10
4241464	$30.28	105	7.5	2	46.7%	30.62	11.4	$14.98	85	16.8	2	46.7%	17.67	26.50
4241512	$42.41	75	3.7	1	45.3%	14.63	11.3	$37.30	75	13.8	1	45.3%	12.08	9.50
4241608	$34.87	105	7.3	2	46.1%	31.89	16.1	$19.65	95	18.7	2	46.1%	22.07	44.70
4241680	$25.90	105	7.6	8	43.9%	26.44	7.7	$11.89	95	20.5	8	43.9%	18.34	21.20
4241700	$55.22	75	3.9	1	28.2%	18.3	4.2	$47.18	75	14.4	1	28.2%	15.02	3.00
4241768	$28.93	105	7.6	2	43.7%	25.82	11.5	$14.86	85	16.9	2	43.7%	15.01	26.40
4241834	$65.40	75	4.0	1	15.6%	10.37	2.4	$57.16	75	14.6	1	15.6%	8.67	1.60
4241848	$85.60	75	3.7	1	21.4%	17.53	7.1	$73.48	75	13.9	1	21.4%	14.40	5.70
4241856	$111.79	75	4.0	1	11.4%	14.81	2.5	$95.66	75	14.4	1	11.4%	12.18	1.80
4241880	$42.59	85	4.9	1	41.3%	18.31	14.4	$34.61	75	13.6	1	41.3%	12.33	12.40
4241904	$40.96	85	4.9	1	45.2%	21.91	13.5	$32.39	75	13.7	1	45.2%	14.62	12.20
4241944	$30.04	105	7.5	2	43.7%	25.82	12.9	$16.44	85	16.5	2	43.7%	15.01	28.80
4241968	$57.09	75	4.0	1	23.9%	14.99	4	$48.70	75	14.5	1	23.9%	12.35	2.80
4241992	$29.20	105	7.4	2	46.8%	26.58	13.7	$16.65	75	13.3	2	46.8%	12.63	25.90
4242016	$47.11	75	3.9	1	31.6%	14.65	6.2	$40.64	75	14.3	1	31.6%	12.09	4.90
4242032	$32.95	105	7.3	1	43.8%	24.24	18	$22.76	75	12.9	1	43.8%	11.64	26.10
4242084	$33.39	105	7.3	3	43.4%	25.82	16.7	$20.33	95	18.3	3	43.4%	17.92	45.90
4242168	$28.58	105	7.6	12	43.8%	25.82	11	$14.08	95	20.0	12	43.8%	17.93	30.00
4242192	$31.98	105	7.4	1	43.6%	25.82	15.4	$21.80	75	13.6	1	43.6%	12.32	18.30
4242280	$37.99	95	6.3	1	43.9%	33.43	9.6	$19.88	75	14.0	1	43.9%	18.16	16.00
4242328	$88.01	75	4.0	1	14.6%	14.86	2.7	$74.99	75	14.5	1	14.6%	12.24	1.70
4242352	$33.33	95	6.2	1	43.7%	21.92	13.2	$24.18	75	13.8	1	41.5%	12.32	13.90
4242392	$42.20	85	4.9	1	43.3%	20.45	14.2	$34.13	75	13.7	1	43.3%	13.69	12.30
4242472	$30.71	105	7.5	3	44.7%	30.06	10.5	$14.93	95	19.9	3	44.7%	20.82	29.40
4242596	$30.56	105	7.4	2	44.0%	25.37	14	$17.94	85	16.1	2	44.0%	14.77	31.60
4242632	$33.21	105	7.4	1	45.3%	32.81	12.1	$17.39	75	13.3	1	45.3%	15.25	23.60
4242640	$41.35	75	3.8	1	42.3%	13.71	9.9	$36.15	75	14.0	1	42.3%	11.32	8.20
4242648	$34.41	105	7.3	1	43.7%	25.82	18.6	$21.48	85	15.7	1	43.7%	15.02	36.70
4242672	$39.70	95	6.1	1	44.1%	28.5	14.4	$29.66	75	13.7	1	44.1%	15.68	13.50
4242688	$168.79	75	4.0	1	7.1%	15.09	1	$141.31	75	14.7	1	7.1%	12.39	0.10
4242704	$63.48	75	3.9	1	24.1%	16.39	5.3	$54.41	75	14.3	1	24.1%	13.48	4.10
4242824	$70.46	75	3.9	1	20.0%	15.34	4.2	$61.11	75	14.3	1	20.0%	12.62	3.40
4242912	$28.71	105	7.3	2	43.9%	18.33	17.9	$19.55	85	15.4	2	43.9%	10.94	41.00
4242928	$29.75	105	7.5	27	43.2%	25.82	12.1	$15.45	95	19.9	27	43.2%	17.93	32.90
4242968	$80.18	75	4.0	1	16.4%	15.02	3.1	$68.37	75	14.5	1	16.4%	12.36	2.20
4242976	$27.30	105	7.6	3	44.6%	27.86	9.1	$12.98	95	20.2	3	44.6%	19.21	25.10
4242984	$42.97	75	3.8	1	39.6%	14.41	8.3	$38.50	75	14.0	1	39.6%	11.90	7.40
4243000	$34.90	105	7.5	5	43.3%	35.05	10.7	$15.73	95	20.0	5	43.3%	24.05	29.50
4243064	$35.98	105	7.4	1	43.6%	32.35	14.8	$20.70	75	13.4	1	43.6%	15.07	22.70
4243128	$75.94	75	3.9	1	15.6%	11.94	3.7	$64.98	75	14.4	1	15.6%	9.87	2.50
4243224	$46.90	75	3.8	1	44.9%	18.74	10.7	$40.15	75	13.9	1	44.9%	15.39	9.40
4243232	$26.01	105	7.5	1	44.3%	19.19	14	$19.73	75	14.0	1	44.3%	9.44	13.40
4243248	$33.71	75	3.9	1	46.6%	14.32	7.8	$27.29	75	14.1	1	46.6%	11.83	7.90
4243272	$39.61	95	6.0	1	41.1%	21.95	16.9	$31.09	75	13.4	1	41.1%	12.33	15.80
4243320	$52.09	75	3.7	1	43.2%	18.74	12.5	$45.46	75	13.7	1	43.2%	15.39	10.60
4243408	$53.40	85	4.6	1	43.9%	21.5	20.7	$42.31	75	12.8	1	37.8%	14.36	19.70
4243496	$31.66	85	5.1	1	43.6%	18.3	8.6	$24.09	75	14.3	1	43.6%	12.33	8.50
4243544	$114.58	75	4.0	1	10.7%	15.05	1.4	$97.29	75	14.5	1	10.7%	12.38	0.70
4243552	$142.79	75	4.0	1	7.7%	12.47	1.8	$120.95	75	14.5	1	7.7%	10.27	0.90
4243656	$37.77	85	5.0	1	40.9%	18.01	11.1	$30.68	75	14.0	1	40.9%	12.14	9.50
4243672	$30.67	105	7.4	4	44.0%	25.82	13.8	$17.01	95	19.1	4	44.0%	17.93	38.10
4243704	$32.56	105	7.4	1	44.3%	27.86	15.1	$21.94	75	13.7	1	44.3%	13.14	17.60

4243720	$31.43	105	7.5	1	42.7%	25.82	14	$151.37	75	14.6	1	6.2%	10.75	0.60
4243747	$31.72	105	7.4	3	43.6%	25.82	14.8	$17.93	95	18.9	3	43.6%	17.91	40.50
4243816	$29.70	105	7.5	4	43.6%	25.82	12.3	$15.70	95	19.6	4	43.6%	17.93	33.80
4243828	$162.96	75	3.8	1	9.6%	15.07	5.1	$142.25	75	14.0	1	9.6%	12.38	4.50
4243928	$91.15	75	3.8	1	18.0%	16.05	5.8	$79.17	75	14.1	1	18.0%	13.19	5.00
4243944	$32.37	105	7.4	2	43.2%	25.82	15.5	$19.11	85	16.1	2	43.2%	15.01	34.70
4243968	$45.57	75	3.8	1	42.8%	16.53	10.4	$39.90	75	14.0	1	42.8%	13.62	8.70
4244128	$31.85	105	7.4	4	44.1%	29.35	12.2	$16.35	95	19.5	4	44.1%	20.29	34.00
4244224	$218.83	75	4.0	1	6.2%	18.23	0.9	$195.63	75	14.6	1	6.2%	14.90	1.86
4244400	$63.22	75	3.9	1	22.6%	14.52	5.2	$55.29	75	14.2	1	22.6%	11.97	4.40
4244416	$41.27	85	5.0	1	37.2%	18.32	10.3	$33.74	75	14.0	1	37.2%	12.33	9.30
4244512	$67.86	75	3.6	1	29.7%	14.36	12.3	$59.09	75	13.5	1	29.7%	11.85	10.40
4244528	$209.64	75	3.9	1	8.0%	21.16	3.1	$175.38	75	14.3	1	8.0%	17.22	2.10
4244664	$35.44	75	3.9	1	41.6%	14.26	6.6	$31.09	75	14.4	1	41.6%	11.78	5.30
4244672	$32.20	105	7.4	2	43.4%	25.82	15.3	$19.38	85	16.1	2	43.4%	15.02	32.70
4244704	$55.77	75	3.8	1	29.2%	13.67	7.5	$48.21	75	14.0	1	29.2%	11.28	6.00
4244824	$29.70	105	7.5	4	43.4%	25.82	12.1	$15.58	85	16.7	4	43.4%	15.02	28.00
4244864	$33.03	105	7.4	8	44.1%	28.5	14.6	$18.33	95	18.8	8	44.1%	19.68	40.70
4245192	$32.59	105	7.3	2	44.2%	24.65	17.6	$20.38	95	18.9	2	44.2%	17.15	37.70
4245312	$33.93	85	4.9	1	39.3%	11.63	11.9	$28.51	75	13.9	1	39.3%	8.10	10.20
4245448	$265.44	75	3.7	1	5.7%	12.94	6.1	$225.17	75	13.8	1	5.7%	10.66	4.70
4245452	$117.70	75	4.0	1	13.4%	20.78	2.3	$99.62	75	14.5	1	13.4%	16.97	1.50
4245568	$32.14	105	7.5	1	45.7%	32.12	12.1	$17.59	75	13.9	1	45.7%	14.97	18.30
4245592	$31.91	105	7.4	1	44.9%	28.67	14	$21.44	75	13.9	1	44.9%	13.53	14.50
4245732	$37.36	105	7.3	1	43.5%	31.89	16.7	$23.02	75	13.2	1	43.5%	14.88	23.40
4245752	$75.33	75	3.9	1	18.0%	15.02	3.7	$64.76	75	14.4	1	18.0%	12.36	2.90
4245824	$28.02	105	7.6	1	49.1%	32.33	10.1	$15.72	75	14.2	1	49.1%	15.06	14.20
4245848	$63.27	75	3.7	1	30.8%	15.56	10.6	$54.73	75	13.7	1	30.8%	12.81	8.80
4245992	$48.75	75	3.6	1	43.5%	14.56	14.1	$41.96	75	13.5	1	43.5%	12.02	12.70
4246000	$35.40	75	3.9	1	43.8%	14.32	7.8	$29.44	75	14.3	1	43.8%	11.83	7.00
4246016	$49.20	95	5.8	1	38.2%	23.71	19.3	$39.21	75	12.9	1	38.2%	13.23	18.50
4246072	$29.74	105	7.6	1	44.2%	26.94	12.4	$18.67	75	14.0	1	44.2%	12.71	15.60
4246112	$80.52	75	3.6	1	23.4%	14.99	9.8	$71.97	75	13.6	1	23.4%	12.35	9.10
4246120	$97.40	75	4.0	1	13.3%	15.89	2	$83.13	75	14.6	1	13.3%	13.06	1.20
4246160	$27.24	105	7.4	1	43.7%	18.98	15.3	$18.14	95	19.7	1	43.7%	13.39	26.90
4246216	$79.91	75	4.0	1	17.4%	15.95	3.5	$68.19	75	14.4	1	17.4%	13.12	2.60
4246232	$130.17	75	3.9	1	10.0%	15.06	2.7	$110.92	75	14.4	1	10.0%	12.38	1.90
4246256	$33.53	105	7.5	14	43.6%	33.29	10.8	$15.36	95	20.2	14	43.6%	22.94	29.90
4246264	$30.79	105	7.5	3	43.0%	29.88	10.7	$14.72	95	20.3	3	43.0%	20.68	29.30
4246312	$132.16	75	3.9	1	10.3%	15.06	3.6	$113.76	75	14.3	1	10.3%	12.38	2.90
4246344	$29.08	105	7.4	3	44.0%	24.24	12.9	$16.20	95	19.1	3	44.0%	16.88	35.90
4246376	$30.15	105	7.5	1	43.0%	25.82	12.6	$18.62	75	14.0	1	43.0%	12.32	16.70
4246392	$30.54	105	7.5	1	44.1%	25.81	14	$19.49	75	13.7	1	44.1%	12.32	18.30
4246400	$104.54	75	4.0	1	14.5%	19.9	2.2	$88.29	75	14.6	1	14.5%	16.28	1.30
4246488	$60.98	75	4.0	1	22.4%	15.32	3.7	$52.76	75	14.5	1	22.4%	12.62	2.90
4246504	$221.95	75	4.0	1	6.8%	21.03	0.9	$184.52	75	14.6	1	6.8%	17.12	0.10
4246568	$60.13	75	3.9	1	23.2%	14.08	5.1	$52.62	75	14.3	1	23.2%	11.62	4.30
4246592	$28.20	105	7.6	2	46.8%	31.44	9.1	$13.12	85	17.4	2	46.8%	18.02	20.90
4246720	$219.19	75	3.9	1	6.9%	19.2	2.2	$183.00	75	14.4	1	6.9%	15.67	1.20
4246728	$105.89	75	3.8	1	16.5%	18.47	5.1	$91.48	75	14.1	1	16.5%	15.14	4.40
4246792	$32.89	105	7.4	1	44.0%	25.82	17	$22.44	75	13.4	1	44.0%	12.32	21.40
4246800	$46.11	75	3.7	1	35.3%	10.59	10.3	$41.64	75	13.8	1	35.3%	8.79	9.40
4246864	$33.23	105	7.4	1	43.4%	25.84	16.9	$23.57	75	13.7	1	43.4%	12.32	16.80
4246888	$32.31	105	7.4	2	43.4%	25.82	15.7	$19.13	75	13.1	2	43.4%	12.31	29.40
4246944	$91.07	75	4.0	1	12.7%	12.43	2.8	$78.21	75	14.5	1	12.7%	10.26	2.00
4247000	$32.15	105	7.4	1	43.9%	27.24	14.8	$19.27	85	16.4	1	43.9%	15.69	27.70
4247064	$67.88	75	4.0	1	22.9%	19.31	3.2	$57.59	75	14.5	1	22.9%	15.83	2.20

4247080	$30.77	105	7.3	1	46.9%	25.66	16.7	$20.40	75	12.9	1	46.9%	12.24	28.80
4247152	$30.18	105	7.4	4	43.6%	25.82	12.7	$16.28	95	19.3	4	43.6%	17.93	35.10
4247248	$66.88	75	4.0	1	22.1%	17.31	3.8	$57.38	75	14.5	1	22.1%	14.22	2.90
4247264	$201.76	75	4.0	1	7.4%	20.12	1.5	$168.23	75	14.6	1	7.4%	16.43	0.60
4247344	$36.95	85	5.1	1	42.6%	18.3	11.5	$29.66	75	14.1	1	42.6%	12.33	10.00
4247400	$59.76	75	3.8	1	27.9%	12.61	9.2	$52.04	75	13.9	1	27.9%	10.42	7.60
4247404	$37.75	85	4.9	1	40.3%	16.14	11.7	$31.02	75	13.8	1	40.3%	10.95	10.00
4247416	$38.06	105	7.0	1	48.7%	27.7	24.4	$28.91	75	12.5	1	48.7%	13.07	24.20
4247424	$35.19	105	7.3	1	41.3%	25.86	17.1	$25.88	75	13.7	1	41.3%	12.32	16.10
4247464	$52.54	75	3.6	1	39.8%	14.97	13.3	$45.99	75	13.6	1	39.8%	12.34	11.30
4247472	$81.73	75	3.9	1	18.9%	16.81	4.9	$69.83	75	14.2	1	18.9%	13.81	3.70
4247480	$43.28	75	3.9	1	38.7%	18.75	5.8	$37.39	75	14.4	1	38.7%	15.40	4.50
4247544	$91.05	75	3.9	1	15.9%	15.6	4.5	$78.51	75	14.3	1	15.9%	12.83	3.70
4247560	$92.18	75	3.9	1	12.0%	11.69	2.3	$79.47	75	14.5	1	12.0%	9.75	1.50
4247600	$60.59	75	3.8	1	30.9%	16.87	8.7	$52.47	75	14.0	1	30.9%	13.88	7.10
4247672	$32.91	95	6.3	1	44.1%	23.39	11.9	$24.97	75	14.1	1	44.1%	13.08	10.90
4247736	$35.95	95	6.3	1	44.9%	27.43	12.4	$25.49	75	13.9	1	44.9%	15.08	12.40
4247872	$30.09	105	7.4	1	46.1%	26.59	14.4	$20.90	75	13.8	1	46.1%	12.65	14.40
4247896	$53.19	75	3.8	1	33.3%	14.97	8.9	$47.23	75	14.0	1	33.3%	12.35	7.90
4247968	$32.34	105	7.4	1	44.3%	27.09	15.6	$20.47	75	13.5	1	44.3%	12.78	22.00
4248000	$32.41	105	7.4	1	43.7%	25.52	16.3	$20.09	85	16.2	1	43.7%	14.85	33.50
4248032	$39.77	105	6.9	1	46.0%	23.7	27.4	$30.01	95	17.9	1	46.0%	16.54	40.00
4248048	$28.42	105	7.5	1	43.9%	26.12	10.5	$15.11	75	13.8	1	43.9%	12.44	19.60
4248064	$42.13	75	3.9	1	34.2%	11.51	7	$35.25	75	14.2	1	34.2%	9.53	6.00
4248072	$121.88	75	3.9	1	14.0%	20.05	4.7	$103.16	75	14.2	1	14.0%	16.39	3.50
4248176	$37.87	105	7.2	1	45.9%	34.01	17.8	$24.75	75	13.2	1	45.9%	15.78	22.10
4248224	$36.25	105	7.2	1	43.3%	25.82	20.2	$24.78	85	15.7	1	43.3%	15.02	33.40
4248320	$55.94	75	3.8	1	27.6%	11.16	8.6	$48.42	75	13.9	1	27.6%	9.24	7.00
4248336	$30.81	105	7.4	1	45.2%	27.55	13.7	$17.66	75	13.2	1	45.2%	12.99	26.20
4248360	$24.77	105	7.6	10	46.7%	23.44	10	$12.82	95	20.0	10	46.7%	16.39	27.80
4248376	$29.00	105	7.5	5	43.4%	25.82	11.2	$14.37	95	20.0	5	43.4%	17.93	30.60
4248448	$59.66	75	3.9	1	25.3%	16.88	4.7	$51.25	75	14.4	1	25.3%	13.88	3.50
4248480	$25.98	105	7.6	4	43.0%	25.82	7.7	$11.81	95	20.6	4	43.0%	17.93	20.70
4248696	$30.50	105	7.3	1	45.6%	22.62	17.9	$22.54	75	13.3	1	45.6%	10.94	20.90
4248704	$36.75	95	6.2	1	41.3%	21.94	14.8	$28.58	75	13.8	1	41.3%	12.33	13.80
4248728	$30.82	105	7.4	2	45.4%	26.59	14.5	$17.35	95	18.8	2	45.4%	18.43	40.10
4248824	$51.10	75	3.8	1	34.6%	14.97	8.9	$45.54	75	14.0	1	34.6%	12.35	8.00
4248856	$55.07	75	3.9	1	30.3%	15.48	7	$47.49	75	14.2	1	30.3%	12.75	5.60
4248868	$43.35	75	4.0	1	29.6%	14.97	2.5	$37.58	75	14.5	1	29.6%	12.35	1.70
4248904	$75.22	75	3.7	1	24.8%	16.39	8.8	$64.84	75	13.9	1	24.8%	13.48	7.20
4248912	$28.89	105	7.4	1	46.3%	25.36	14	$18.34	75	13.7	1	46.3%	12.12	19.10
4248960	$35.60	95	6.2	1	43.6%	23.39	14.4	$26.99	75	13.8	1	43.6%	13.08	13.90
4249048	$70.88	75	3.9	1	21.2%	17.1	4.2	$60.28	75	14.4	1	21.2%	14.05	3.00
4249128	$30.05	105	7.5	3	43.3%	25.82	12.6	$15.83	95	19.7	3	43.3%	17.93	34.20
4249144	$30.22	105	7.5	4	44.1%	25.82	13.4	$16.43	95	19.4	4	44.1%	17.93	36.80
4249184	$32.29	105	7.3	1	43.9%	22.25	19.1	$23.69	75	13.0	1	43.9%	10.79	25.40
4249224	$32.28	105	7.4	1	43.1%	25.83	15.3	$22.45	75	13.7	1	43.1%	12.32	17.10
4249240	$38.09	75	3.9	1	42.2%	13.12	8.3	$31.73	75	14.2	1	42.2%	10.85	6.80
4249272	$69.89	75	4.0	1	20.0%	16.31	3.3	$59.70	75	14.5	1	20.0%	13.41	2.30
4249288	$31.58	105	7.4	2	44.4%	25.96	15.4	$18.64	85	16.0	2	44.4%	15.09	35.50
4249304	$44.37	75	4.0	1	33.4%	16.26	4.9	$38.59	75	14.5	1	33.4%	13.40	3.90
4249312	$44.07	95	6.0	1	42.7%	27.96	17.9	$33.71	75	13.3	1	42.7%	15.38	16.90
4249368	$43.27	75	3.9	1	44.4%	18.36	8.6	$34.39	75	14.1	1	44.4%	15.09	8.30
4249400	$33.11	95	6.2	1	42.9%	22.32	11.8	$25.37	75	14.0	1	42.9%	12.52	10.90
4249440	$64.33	75	3.8	1	26.7%	14.99	7.9	$55.59	75	14.0	1	26.7%	12.35	6.40
4249552	$106.10	75	3.9	1	13.8%	17.46	3.3	$89.87	75	14.4	1	13.8%	14.32	2.20
4249680	$32.36	105	7.5	1	43.7%	28.5	13.7	$19.91	75	13.7	1	43.7%	13.44	18.30

4249720	$52.57	75	3.8	1	35.7%	16.46	9.2	$46.69	75	14.0	1	35.7%	13.55	8.30
4249728	$31.85	105	7.4	2	43.3%	25.82	14.9	$17.83	95	19.2	2	43.3%	17.91	40.50
4249736	$71.48	75	3.9	1	19.0%	14.54	4.1	$61.69	75	14.4	1	19.0%	11.98	3.30
4249760	$39.55	95	6.1	1	44.9%	27.6	16	$28.34	75	13.5	1	44.9%	15.18	16.70
4249768	$49.27	75	3.7	1	44.5%	18.62	11.9	$42.92	75	13.8	1	44.5%	15.29	10.00
4249880	$69.45	75	3.8	1	25.0%	15.75	7.6	$60.03	75	14.0	1	25.0%	12.96	6.20
4249920	$31.37	105	7.5	1	43.4%	29.7	12.2	$16.62	75	13.9	1	43.4%	13.99	22.80
4249936	$76.71	75	3.9	1	17.7%	13.23	5.1	$66.81	75	14.2	1	17.7%	10.92	4.30
4249944	$50.51	75	3.8	1	39.7%	18.03	9.8	$43.75	75	14.0	1	39.7%	14.83	8.10
4249960	$92.55	75	3.9	1	12.5%	11.08	3.6	$81.10	75	14.3	1	12.5%	9.26	2.90
4250000	$43.21	95	6.0	1	43.3%	30.07	15.7	$32.31	75	13.6	1	43.3%	16.56	14.70
4250016	$31.06	105	7.5	3	44.4%	27.55	13.5	$16.73	95	19.3	3	44.4%	18.99	37.10
4250088	$29.16	105	7.5	2	45.1%	29.52	10.7	$14.47	85	17.1	2	45.1%	17.03	24.70
4250104	$74.69	75	3.8	1	27.2%	21.63	7	$63.66	75	14.1	1	27.2%	17.69	5.60
4250208	$46.84	75	3.9	1	36.0%	18.39	6.1	$41.12	75	14.3	1	36.0%	15.11	5.20
4250232	$89.62	75	3.9	1	15.1%	15.02	3.8	$76.55	75	14.4	1	15.1%	12.36	2.70
4250272	$30.14	105	7.5	1	43.9%	25.82	13.2	$17.93	75	13.7	1	43.9%	12.32	21.70
4250280	$88.67	75	3.9	1	15.5%	15.02	3.9	$76.30	75	14.3	1	15.5%	12.36	3.10
4250320	$28.05	105	7.5	4	43.9%	24.65	11.4	$14.70	95	19.9	4	43.9%	17.17	31.50
4250344	$26.72	105	7.5	5	43.5%	19.88	13.7	$15.57	95	19.5	5	43.5%	13.98	37.30
4250408	$25.54	105	7.5	2	43.2%	17.27	14.2	$15.65	95	19.4	2	43.2%	12.22	38.80
4250432	$38.18	75	3.9	1	38.0%	13.12	7.1	$33.31	75	14.3	1	38.0%	10.86	5.70
4250528	$24.36	105	7.5	22	44.1%	18.48	11.9	$14.11	95	19.5	22	44.1%	13.06	32.90
4250544	$36.48	85	5.1	1	43.0%	18.3	11.3	$28.38	75	14.0	1	43.0%	12.33	10.50
4250552	$55.36	75	3.7	1	34.8%	16.37	9.8	$49.29	75	13.9	1	34.8%	13.47	8.90
4250632	$31.43	95	6.3	1	44.2%	20.97	12.4	$24.10	75	14.0	1	44.2%	11.83	11.70
4250672	$30.87	105	7.4	6	43.9%	25.82	14	$17.17	95	19.1	6	43.9%	17.93	38.60
4250720	$31.09	105	7.3	2	43.8%	22.84	16.9	$19.41	95	18.5	2	43.8%	15.95	46.10
4250736	$30.06	105	7.3	1	49.0%	26.28	17.2	$21.58	75	13.5	1	49.0%	12.51	17.30
4250748	$47.70	75	3.9	1	30.3%	14.97	5.4	$41.67	75	14.4	1	30.3%	12.35	4.40
4250760	$198.89	75	4.0	1	7.0%	18.45	1.1	$165.74	75	14.6	1	7.0%	15.08	0.20
4250880	$28.33	105	7.4	4	45.6%	22.96	14.4	$16.65	95	18.8	4	45.6%	16.04	39.80
4251016	$45.27	75	3.8	1	41.1%	14.96	10.4	$39.56	75	14.0	1	41.1%	12.34	8.70
4251120	$47.18	75	3.7	1	38.6%	13.92	10.4	$42.39	75	13.8	1	38.6%	11.49	9.50
4251144	$29.97	105	7.5	4	43.1%	25.82	12.3	$15.64	95	19.8	4	43.1%	17.93	33.60
4251152	$37.04	85	4.9	1	41.0%	12.89	14.5	$30.98	75	13.5	1	41.0%	8.85	12.40
4251176	$32.27	95	6.3	1	43.0%	21.92	11.9	$23.10	75	14.2	1	43.0%	12.32	12.30
4251208	$25.13	105	7.4	1	47.9%	18.01	16.4	$18.19	95	19.8	1	47.9%	12.73	22.20
4251240	$123.29	75	3.9	1	12.2%	19.13	2.3	$105.07	75	14.5	1	12.2%	15.64	1.60
4251320	$75.83	75	3.9	1	18.6%	15.01	4.5	$65.52	75	14.3	1	18.6%	12.36	3.70
4251344	$40.54	85	4.8	1	46.3%	17.7	17.2	$31.78	75	13.1	1	46.3%	11.95	19.40
4251384	$34.84	105	7.2	6	47.7%	30.81	18.1	$20.75	95	18.1	6	47.7%	21.52	50.20
4251488	$285.15	75	4.0	1	4.5%	16.95	0.6	$259.16	75	14.6	1	4.5%	13.87	1.86
4251496	$28.74	105	7.6	3	46.5%	32.33	8.8	$12.75	95	20.7	3	46.5%	22.35	24.20
4251536	$33.00	105	7.0	1	48.8%	20.93	23.7	$24.90	95	18.4	1	48.8%	14.70	34.30
4251552	$238.92	75	4.0	1	6.3%	20.44	1.2	$198.33	75	14.6	1	6.3%	16.64	0.30
4251568	$56.20	75	4.0	1	24.2%	14.99	4.1	$48.20	75	14.5	1	24.2%	12.35	3.00
4251576	$47.61	75	4.0	1	28.6%	14.98	4.2	$41.14	75	14.6	1	28.6%	12.35	3.10
4251592	$37.16	95	6.1	1	42.7%	21.94	16.4	$29.30	75	13.6	1	42.7%	12.33	15.40
4251632	$36.27	85	4.8	1	48.9%	16.53	16.1	$30.09	75	13.4	1	48.9%	11.21	14.00
4251656	$30.84	105	7.4	3	43.3%	25.82	13.5	$16.85	95	19.3	3	43.3%	17.93	37.10
4251720	$51.58	75	3.6	1	35.6%	10.21	13.4	$47.24	75	13.4	1	35.6%	8.48	12.60
4251744	$30.72	105	7.6	1	44.3%	31.45	10.7	$15.99	75	14.2	1	44.3%	14.69	18.20
4251760	$27.61	105	7.6	1	44.4%	25.81	11.4	$16.69	75	14.0	1	44.4%	12.32	16.20
4251880	$32.73	105	7.6	3	44.4%	35.59	9.5	$14.55	95	20.3	3	44.4%	24.39	26.30
4251904	$72.50	75	3.8	1	25.6%	16.78	8.4	$62.57	75	14.0	1	25.6%	13.80	6.90
4251912	$33.92	105	7.1	1	48.4%	24.92	21.7	$23.05	75	12.3	1	48.4%	11.94	34.20

4251984	$36.12	105	7.3	1	44.1%	30.81	16.5	$22.07	75	13.3	1	44.1%	14.51	23.80
4252016	$33.24	105	7.4	1	43.4%	25.82	16.8	$23.30	75	13.5	1	43.4%	12.32	19.50
4252056	$35.66	85	5.1	1	43.4%	18.3	10.9	$27.79	75	14.1	1	43.4%	12.33	9.90
4252216	$30.86	105	7.4	1	43.7%	25.84	13.9	$21.42	75	13.9	1	43.7%	12.32	13.80
4252224	$65.03	75	3.9	1	23.8%	16.59	5.4	$55.77	75	14.3	1	23.8%	13.64	4.20
4252264	$30.58	105	7.4	1	44.3%	25.37	14.6	$19.22	75	13.5	1	44.3%	12.12	20.90
4252312	$45.62	105	6.6	1	45.3%	20.7	33.8	$39.02	105	18.5	1	45.3%	16.95	27.00
4252320	$33.21	105	7.5	6	44.2%	34.27	11.4	$15.55	95	20.2	6	44.2%	23.57	31.20
4252432	$27.85	105	7.3	14	44.1%	16.46	18.3	$19.77	95	17.8	14	44.1%	11.68	50.10
4252440	$27.36	105	7.5	1	43.8%	22.02	12.5	$16.93	75	13.6	1	43.8%	10.69	18.80
4252488	$31.72	105	7.4	1	43.8%	25.82	15.3	$19.87	75	13.5	1	43.8%	12.32	22.00
4252584	$31.83	105	7.5	6	45.1%	31.89	11.3	$14.97	95	20.2	6	45.1%	22.07	31.30
4252616	$26.14	105	7.4	1	46.3%	20.64	14.3	$16.61	95	19.7	1	46.3%	14.49	26.60
4252632	$331.58	75	4.0	1	4.2%	18.63	1.2	$274.18	75	14.6	1	4.2%	15.21	0.30
4252664	$29.61	105	7.6	1	43.8%	25.82	12.7	$16.83	75	13.9	1	43.8%	12.32	21.40
4252808	$28.67	105	7.5	3	44.4%	25.81	11.6	$14.90	95	19.7	3	44.4%	17.92	31.90
4252872	$139.27	75	4.0	1	8.7%	14.3	1.9	$117.06	75	14.5	1	8.7%	11.76	0.90
4252968	$45.03	75	3.7	1	42.4%	14.05	11.8	$39.52	75	13.8	1	42.4%	11.60	10.00
4252984	$37.23	105	7.3	1	43.4%	32.81	15.5	$25.83	75	13.7	1	43.4%	15.27	14.60
4253088	$38.98	105	7.0	2	46.9%	30.62	21.4	$24.19	95	17.6	2	46.9%	21.20	48.70
4253152	$53.18	75	3.9	1	23.3%	12.24	4.3	$46.62	75	14.4	1	23.3%	10.12	3.50
4253160	$58.25	75	3.8	1	28.4%	14.9	7.2	$50.17	75	14.1	1	28.4%	12.28	5.70
4253168	$121.69	75	4.0	1	9.7%	13.03	2.6	$104.20	75	14.4	1	9.7%	10.74	1.80
4253184	$76.86	95	4.6	1	44.9%	16.38	45.9	$69.32	105	16.6	1	44.9%	15.85	40.70
4253192	$51.49	75	3.6	1	39.3%	13.45	13.4	$46.75	75	13.4	1	39.3%	11.11	12.50
4253200	$37.44	75	3.9	1	44.0%	15.87	7.9	$31.66	75	14.2	1	44.0%	13.09	6.90
4253208	$40.83	85	4.9	1	43.9%	18.3	15.2	$33.39	75	13.6	1	43.9%	12.33	13.30
4253248	$42.56	85	5.0	1	42.7%	25	10.1	$33.33	75	14.1	1	42.7%	16.56	8.50
4253288	$24.76	105	7.6	3	43.9%	22.24	10.2	$12.80	95	20.2	3	43.9%	15.56	27.80
4253296	$33.36	105	7.3	1	43.7%	25.82	17.1	$23.01	75	13.3	1	43.7%	12.32	21.10
4253320	$191.40	75	4.0	1	6.5%	16.14	0.9	$159.26	75	14.6	1	6.5%	13.22	0.10
4253336	$166.30	75	3.9	1	7.7%	11.88	3.7	$77.65	75	14.5	1	14.2%	12.36	1.80
4253344	$90.79	75	4.0	1	14.2%	15.03	2.7	$131.92	75	14.2	1	7.7%	9.80	2.60
4253368	$24.55	105	7.5	16	44.8%	19.87	11.6	$13.72	95	19.8	16	44.8%	13.98	32.00
4253392	$24.99	105	7.5	1	45.5%	20.35	12.2	$16.80	75	13.8	1	45.5%	9.96	16.10
4253416	$126.09	75	4.0	1	8.1%	11.05	1.5	$106.93	75	14.6	1	8.1%	9.23	0.50
4253432	$43.62	85	4.8	1	44.6%	18.82	17.4	$34.62	75	13.2	1	44.6%	12.66	16.40
4253448	$172.35	75	3.7	1	10.9%	18.05	6.7	$149.66	75	13.7	1	10.9%	14.78	6.10
4253464	$29.50	105	7.5	4	43.3%	25.82	11.8	$15.26	95	19.9	4	43.3%	17.93	32.10
4253496	$31.18	105	7.3	1	43.6%	22.98	16.7	$22.40	75	13.5	1	43.6%	11.10	17.50
4253504	$51.68	75	3.9	1	28.8%	14.29	6.6	$44.97	75	14.2	1	28.8%	11.79	5.30
4253544	$44.83	75	3.9	1	35.8%	16.17	6.8	$39.33	75	14.3	1	35.8%	13.32	5.80
4253568	$33.67	105	7.3	2	43.9%	25.82	17.8	$20.87	85	15.6	2	43.9%	15.01	40.60
4253576	$265.32	75	4.0	1	4.7%	15.13	1.7	$221.39	75	14.5	1	4.7%	12.41	0.80
4253592	$61.53	75	4.0	1	19.1%	11.44	4	$53.51	75	14.4	1	19.1%	9.47	3.20
4253696	$29.83	105	7.5	3	43.6%	25.82	12.4	$15.88	95	19.5	3	43.6%	17.91	34.20
4253712	$32.67	105	7.4	1	43.2%	25.82	15.9	$21.39	75	13.5	1	43.2%	12.32	21.20
4253728	$49.64	75	3.8	1	35.4%	14.97	8.7	$44.21	75	14.0	1	35.4%	12.35	7.80
4253736	$30.56	105	7.5	9	43.9%	28.67	11.2	$14.80	95	20.0	9	43.9%	19.80	30.90
4253752	$73.49	75	3.7	1	25.1%	14.99	9.6	$63.19	75	13.8	1	25.1%	12.35	7.90
4253768	$190.69	75	3.9	1	6.8%	13.83	3.4	$160.16	75	14.2	1	6.8%	11.37	2.30
4253856	$35.50	105	7.2	1	43.8%	25.82	19.7	$25.71	75	13.0	1	43.8%	12.32	23.80
4253872	$61.10	75	4.0	1	22.2%	14.99	3.9	$52.31	75	14.5	1	22.2%	12.35	2.80
4253880	$37.21	75	3.8	1	46.7%	14.55	9	$32.58	75	14.1	1	46.7%	12.02	7.50
4253916	$757.51	75	3.7	1	2.2%	15.23	6	$640.85	75	13.7	1	2.2%	12.45	4.70
4253920	$34.82	95	6.2	1	41.6%	21.94	13.1	$26.80	75	14.0	1	41.6%	12.33	12.10
4253928	$139.61	75	4.0	1	8.6%	15.24	1	$117.54	75	14.7	1	8.6%	12.52	0.20

4253944	$38.30	85	5.0	1	43.7%	20.83	10.9	$30.61	75	14.0	1	43.7%	13.93	9.30
4253968	$33.53	85	5.1	1	43.5%	19.82	8.9	$24.91	75	14.2	1	43.5%	13.31	9.00
4254016	$92.14	75	3.9	1	14.8%	15.03	3.9	$78.38	75	14.3	1	14.8%	12.36	2.70
4254024	$89.65	75	4.0	1	13.8%	14.95	2	$75.99	75	14.6	1	13.8%	12.30	1.00
4254040	$44.47	75	3.9	1	35.6%	15.05	7.5	$39.25	75	14.2	1	35.6%	12.41	6.50
4254056	$51.87	75	3.9	1	28.4%	14.98	5.9	$44.88	75	14.4	1	28.4%	12.35	4.60
4254064	$187.06	75	3.9	1	7.1%	15.09	2.9	$158.17	75	14.3	1	7.1%	12.39	1.90
4254104	$42.97	105	6.9	1	43.8%	25.52	27.3	$31.21	85	14.7	1	43.8%	14.86	38.30
4254160	$161.75	75	4.0	1	8.8%	18.41	1.8	$135.55	75	14.5	1	8.8%	15.07	0.90
4254184	$31.77	105	7.4	1	43.3%	25.83	14.9	$21.95	75	13.9	1	43.3%	12.32	15.10
4254264	$102.33	75	3.9	1	14.3%	16.84	3.8	$87.07	75	14.3	1	14.3%	13.82	2.70
4254268	$28.77	105	7.5	1	43.5%	25.82	10.9	$15.33	75	13.8	1	43.5%	12.31	20.60
4254288	$42.54	75	3.9	1	34.9%	14.97	6	$37.45	75	14.4	1	34.9%	12.35	5.10
4254320	$40.28	75	3.9	1	43.4%	15.02	9	$32.64	75	14.2	1	43.4%	12.40	8.50
4254344	$158.18	75	3.9	1	6.9%	10.48	2.9	$133.76	75	14.3	1	6.9%	8.75	1.80
4254352	$32.98	95	6.2	1	41.2%	18.43	13.8	$26.24	75	13.8	1	41.2%	10.50	12.80
4254400	$43.70	75	3.8	1	45.0%	16.94	10.2	$38.18	75	14.0	1	45.0%	13.94	8.50
4254520	$57.35	75	3.7	1	40.4%	21.59	11.1	$49.66	75	13.8	1	40.4%	17.67	9.30
4254552	$43.94	105	7.0	1	42.5%	27.7	25	$33.76	75	12.6	1	42.5%	13.07	24.10
4254568	$86.86	75	3.8	1	19.1%	16.71	5.5	$72.02	75	14.1	1	19.1%	13.72	4.70
4254656	$27.89	105	7.6	12	43.1%	25.82	10.7	$13.86	95	20.2	12	43.1%	17.93	28.90
4254696	$29.98	105	7.5	4	44.1%	25.82	13.2	$16.18	95	19.5	4	44.1%	17.93	36.20
4254728	$37.73	95	6.2	1	43.8%	29.66	11.2	$26.57	75	14.1	1	43.8%	16.32	10.80
4254776	$33.13	105	7.5	1	43.5%	30.62	12.4	$20.50	75	14.1	1	43.5%	14.43	14.90
4254816	$36.69	105	7.5	3	43.7%	36.15	12.7	$17.51	85	16.8	3	43.7%	20.52	29.50
4254872	$29.99	105	7.5	1	44.2%	25.81	13.4	$18.00	75	13.8	1	44.2%	12.32	19.70
4254888	$28.10	85	5.2	1	42.9%	14.29	8.6	$21.70	75	14.3	1	39.1%	9.76	8.70
4254952	$29.27	105	7.4	1	46.4%	23.84	16.2	$18.41	85	16.3	1	46.4%	13.95	30.20
4255000	$35.25	105	7.2	2	46.1%	30.81	17.1	$20.47	95	18.3	2	46.1%	21.34	47.10
4255136	$37.90	75	4.0	1	39.5%	15.54	5.9	$33.02	75	14.5	1	39.5%	12.81	4.60
4255304	$40.52	75	3.9	1	37.2%	14.12	7	$35.79	75	14.2	1	37.2%	11.66	6.00
4255456	$34.93	105	7.4	2	44.2%	31.45	14.8	$19.01	85	16.1	2	44.2%	18.01	34.30
4255480	$73.73	75	3.9	1	22.2%	17.97	5.4	$63.97	75	14.2	1	22.2%	14.75	4.60
4255512	$30.39	105	7.5	1	44.0%	25.82	13.9	$18.45	75	13.8	1	44.0%	12.32	19.90
4255520	$33.95	105	7.0	1	48.2%	20.93	24.5	$25.29	85	15.1	1	48.2%	12.38	34.30
4255572	$29.51	105	7.4	5	46.6%	25.51	15	$16.84	95	19.0	5	46.6%	17.74	41.10
4255584	$92.09	75	3.9	1	16.3%	14.55	5.1	$75.75	75	14.2	1	16.3%	11.98	4.30
4255608	$33.63	85	5.2	1	41.2%	18.3	8.8	$26.80	75	14.4	1	41.2%	12.33	7.40
4255616	$33.67	85	5.0	1	44.2%	15.09	12.2	$26.89	75	13.7	1	44.2%	10.27	12.60
4255664	$29.79	105	7.6	2	42.8%	25.82	11.9	$15.37	85	17.0	2	42.8%	15.01	26.80
4255728	$48.25	75	3.8	1	39.9%	17.26	9.1	$42.78	75	14.0	1	39.9%	14.20	8.20
4255752	$38.99	85	5.0	1	45.8%	22.34	11.8	$31.15	75	13.9	1	45.8%	14.90	10.10
4255792	$110.70	75	3.8	1	16.5%	19.49	5.4	$91.22	75	14.1	1	16.5%	15.95	4.70
4255808	$81.13	75	3.9	1	19.2%	18.82	3.6	$68.78	75	14.4	1	19.2%	15.42	2.50
4255840	$36.47	95	6.3	1	41.5%	25.06	12	$27.35	75	14.1	1	41.5%	13.93	11.00
4255969	$34.38	105	7.3	1	45.2%	27.55	18.3	$23.15	75	12.8	1	45.2%	12.99	26.80
4255996	$30.07	105	7.4	1	45.6%	24.51	15.7	$19.44	75	13.7	1	45.4%	9.84	17.10
4256000	$26.53	105	7.4	1	45.4%	20.08	14.7	$20.51	75	13.5	1	45.6%	11.76	19.70
4256008	$41.75	75	3.9	1	37.1%	14.96	6.9	$36.92	75	14.2	1	37.1%	12.34	6.00
4256088	$27.23	105	7.6	4	43.3%	25.37	10.2	$13.56	95	20.1	4	43.3%	17.64	27.90
4256232	$33.35	105	7.1	1	45.3%	20.15	21.9	$23.76	95	18.6	1	45.3%	14.17	33.10
4256264	$55.57	75	4.0	1	23.6%	14.99	3.2	$47.58	75	14.6	1	23.6%	12.35	2.20
4256408	$253.58	75	3.9	1	3.9%	9.74	2	$214.12	75	14.5	1	3.9%	8.14	1.00
4256432	$44.16	105	6.6	2	44.9%	17.93	34.3	$35.30	95	14.7	2	44.9%	12.67	76.40
4256456	$26.61	105	7.5	7	46.0%	23.32	12.3	$14.59	95	19.6	7	46.0%	16.29	34.00
4256488	$49.82	75	3.8	1	28.8%	10.56	7.6	$43.44	75	14.1	1	28.8%	8.76	6.10
4256496	$48.87	75	3.8	1	43.9%	22.07	8.6	$40.24	75	14.2	1	43.9%	18.07	7.20

4256576	$30.80	105	7.4	5	45.7%	29.02	12.6	$15.99	95	19.6	5	45.7%	20.18	35.20
4256624	$29.48	105	7.5	1	43.8%	25.82	12.1	$16.59	75	13.6	1	43.8%	12.31	22.00
4256664	$37.33	85	5.0	1	43.9%	18.3	12.4	$29.26	75	13.8	1	43.9%	12.33	12.80
4256704	$35.06	105	7.2	1	43.7%	24.93	19.8	$24.69	75	12.7	1	43.7%	11.94	28.50
4256792	$28.54	105	7.4	2	46.2%	23.32	15.2	$16.76	95	18.9	2	46.2%	16.27	41.40
4256816	$148.15	75	4.0	1	9.7%	18.9	1.5	$123.83	75	14.6	1	9.7%	15.46	0.60
4256912	$75.50	75	3.9	1	21.0%	18.57	4.1	$63.96	75	14.4	1	21.0%	15.22	2.90
4256928	$61.62	75	4.0	1	23.1%	16.89	3.4	$52.38	75	14.6	1	23.1%	13.88	2.30
4256960	$42.09	95	6.0	1	44.5%	27.96	17.5	$27.30	75	12.4	1	44.5%	15.36	29.40
4257024	$29.44	105	7.5	3	43.2%	25.82	11.5	$15.24	95	19.8	3	43.2%	17.92	31.70
4257112	$133.36	75	4.0	1	8.9%	15.07	1.1	$112.38	75	14.7	1	8.9%	12.38	0.30
4257120	$178.23	75	4.0	1	6.9%	15.09	1.6	$149.92	75	14.6	1	6.9%	12.39	0.70
4257160	$251.17	75	4.0	1	5.8%	19.22	1.3	$207.67	75	14.6	1	5.8%	15.68	0.40
4257184	$35.50	105	7.2	1	44.8%	29.02	18	$22.76	75	12.6	1	44.8%	13.67	32.50
4257192	$113.89	75	3.9	1	12.1%	16.55	2.6	$97.13	75	14.4	1	12.1%	13.58	1.90
4257232	$29.10	85	5.1	1	47.1%	17.5	9.2	$22.99	75	14.2	1	47.1%	11.83	8.90
4257280	$96.88	75	3.9	1	11.7%	11.17	3.2	$84.64	75	14.3	1	11.7%	9.33	2.50
4257376	$73.47	75	3.9	1	19.8%	13.23	5.4	$59.62	75	14.2	1	19.8%	10.92	4.20
4257480	$35.47	105	7.2	1	43.6%	25.82	19.7	$24.04	75	12.7	1	43.6%	12.32	30.20
4257544	$33.75	85	5.1	1	39.8%	18.01	8.1	$26.94	75	14.3	1	39.8%	12.14	6.70
4257648	$34.72	95	6.2	1	43.8%	21.93	14.7	$26.73	75	13.7	1	43.8%	12.33	14.10
4257680	$29.31	105	7.5	2	44.5%	25.81	12.5	$15.89	95	19.6	2	44.5%	17.91	32.70
4257696	$29.53	105	7.5	3	44.3%	25.81	12.6	$15.84	95	19.4	3	44.3%	17.92	34.80
4257720	$30.33	105	7.5	3	43.7%	25.82	13.2	$16.39	95	19.5	3	43.7%	17.93	36.30
4257752	$37.01	85	5.1	1	40.0%	20.57	8.6	$29.21	75	14.2	1	40.0%	13.77	7.20
4257816	$28.72	105	7.5	3	44.0%	25.82	11.2	$14.83	95	19.7	3	44.0%	17.93	30.90
4257840	$46.55	75	3.8	1	40.0%	14.96	10.5	$40.70	75	14.0	1	40.0%	12.34	8.80
4257904	$40.22	75	3.9	1	43.2%	18.26	7.2	$35.09	75	14.3	1	43.2%	15.00	5.80
4257928	$52.12	75	3.6	1	38.7%	14.97	12.1	$47.18	75	13.6	1	38.7%	12.35	11.20
4257968	$49.82	75	3.9	1	36.2%	17.81	7.1	$41.92	75	14.2	1	36.2%	14.64	6.10
4257976	$43.89	75	3.8	1	44.8%	18.86	8.7	$35.22	75	14.1	1	44.8%	15.49	8.10
4258032	$32.74	105	7.4	1	43.9%	25.82	16.7	$20.82	75	13.3	1	43.9%	12.32	24.70
4258036	$32.16	105	7.4	4	46.3%	30.43	14	$16.89	95	19.5	4	46.3%	21.26	38.80
4258176	$29.65	95	6.4	1	43.0%	21.93	10.1	$21.89	75	14.4	1	43.0%	12.33	9.20
4258240	$30.39	105	7.5	3	43.7%	25.82	13.3	$16.54	95	19.3	3	43.7%	17.93	36.60
4258304	$71.32	75	3.6	1	28.4%	14.99	11.9	$62.10	75	13.5	1	28.4%	12.35	10.10
4258384	$38.39	75	4.0	1	34.1%	12.89	5.1	$33.88	75	14.5	1	34.1%	10.66	4.20
4258432	$25.26	105	7.4	1	46.8%	19.01	15	$18.58	75	13.6	1	46.8%	9.36	17.90
4258504	$34.14	95	6.3	1	40.0%	21.95	11	$25.88	75	14.2	1	43.4%	12.33	10.00
4258528	$31.39	105	7.4	3	44.0%	25.82	14.7	$17.78	95	18.9	3	44.0%	17.91	40.50
4258536	$106.21	75	4.0	1	12.3%	15.8	2.3	$90.57	75	14.5	1	12.3%	12.98	1.60
4258696	$30.20	105	7.4	1	45.6%	25.81	14.8	$18.08	75	13.2	1	45.6%	12.31	26.70
4258712	$29.24	105	7.6	1	43.9%	25.82	12.2	$17.94	75	14.0	1	43.9%	12.32	15.80
4258776	$39.68	75	3.9	1	43.5%	14.95	8.6	$32.49	75	14.2	1	43.5%	12.33	7.30
4258872	$59.56	75	4.0	1	22.6%	15.07	3.7	$50.93	75	14.5	1	22.6%	12.42	2.60
4258936	$32.48	95	6.3	1	43.3%	21.93	12.2	$24.07	75	14.1	1	43.3%	12.33	12.00
4258948	$29.93	105	7.4	2	46.1%	25.81	14.8	$17.01	95	18.9	2	46.1%	17.91	40.60
4259054	$43.06	75	3.7	1	47.1%	16.63	11.4	$36.99	75	13.9	1	47.1%	13.69	9.90
4259120	$31.12	105	7.4	1	43.7%	25.82	14.4	$20.04	75	13.7	1	43.7%	12.32	18.90
4259152	$47.16	75	4.0	1	30.7%	17.38	3.4	$40.54	75	14.6	1	30.7%	14.29	2.40
4259160	$64.03	75	3.9	1	23.5%	15.4	5.7	$54.90	75	14.2	1	23.5%	12.68	4.40
4259176	$29.35	105	7.5	2	44.1%	25.82	12.4	$15.39	85	16.7	2	44.1%	15.01	28.40
4259296	$30.19	105	7.5	1	43.4%	25.82	12.8	$20.59	75	13.9	1	43.4%	12.32	14.10
4259304	$36.75	75	3.9	1	43.9%	14.95	8.2	$32.17	75	14.3	1	43.9%	12.34	6.70
4259312	$27.00	105	7.6	3	43.0%	25.82	9.1	$12.96	95	20.3	3	43.0%	17.93	24.80
4259344	$41.49	85	5.0	1	39.4%	18.31	12.3	$33.66	75	13.8	1	39.4%	12.33	10.50
4259384	$30.80	105	7.4	4	43.6%	25.82	13.7	$16.88	95	19.3	4	43.6%	17.93	37.60

4259520	$41.27	105	7.2	1	43.4%	34.03	19.3	$28.60	75	13.3	1	43.4%	15.78	18.90
4259616	$65.93	75	4.0	1	21.2%	16.2	3.4	$56.61	75	14.5	1	21.2%	13.33	2.50
4259672	$148.87	75	3.9	1	10.3%	19.81	2.2	$125.81	75	14.5	1	10.3%	16.19	1.50
4260000	$27.49	105	7.6	531	43.1%	25.82	10.2	$13.31	95	20.5	531	43.1%	17.93	27.20
4260008	$27.26	105	7.5	1	46.8%	24.1	13.5	$15.97	75	13.5	1	46.8%	11.58	25.00
4260120	$29.34	105	7.5	8	43.2%	25.82	11.5	$14.67	95	19.9	8	43.2%	17.93	31.30
4260136	$55.83	75	3.8	1	30.2%	14.58	7.8	$48.42	75	14.0	1	30.2%	12.02	6.40
4260224	$83.62	75	3.8	1	21.6%	17.87	6.6	$73.22	75	14.0	1	21.6%	14.66	5.90
4260264	$111.55	75	3.9	1	12.7%	17.15	2.8	$95.43	75	14.4	1	12.7%	14.07	2.00
4260432	$178.46	75	3.9	1	8.6%	20.11	2	$149.33	75	14.5	1	8.6%	16.42	1.10
4260456	$34.73	105	7.3	1	44.1%	28.34	17.1	$24.76	75	13.5	1	44.1%	13.37	16.80
4260496	$35.69	105	7.2	1	46.3%	31	17.6	$24.89	75	13.4	1	46.3%	14.61	17.70
4260547	$31.73	105	7.3	1	46.4%	25.81	17.3	$19.79	85	15.6	1	46.4%	15.02	34.30
4260712	$33.01	105	7.6	1	43.6%	33.53	11.3	$16.61	75	14.0	1	43.6%	15.56	20.70
4261000	$29.56	105	7.6	192	43.9%	29.7	9.9	$13.89	95	20.3	192	43.9%	20.55	27.10
4261048	$29.91	105	7.6	5	45.0%	31.67	9.8	$13.85	95	20.4	5	45.0%	21.93	27.10
4261080	$215.76	75	3.8	1	6.9%	15.26	3.9	$171.85	75	14.1	1	6.9%	12.52	2.80
4261112	$30.71	105	7.5	3	45.2%	31.66	9.8	$14.06	95	20.2	3	45.2%	21.92	27.50
4261168	$112.33	75	3.7	1	17.0%	17.67	7.9	$95.83	75	13.8	1	17.0%	14.49	6.40
4261232	$36.93	105	7.4	1	44.9%	35.05	15	$20.63	75	13.3	1	44.9%	16.19	25.90
4261312	$29.59	105	7.5	1	44.0%	25.82	12.4	$19.64	75	13.9	1	44.0%	12.32	14.40
4261328	$29.66	105	7.5	6	44.2%	30.43	9.3	$13.83	95	20.1	6	44.2%	21.08	26.00
4261432	$40.20	85	5.0	1	44.0%	23.27	10.8	$30.81	75	14.0	1	44.0%	15.48	9.80
4261496	$125.37	75	4.0	1	9.7%	15.31	1.3	$30.98	75	14.0	1	47.4%	11.27	8.50
4261512	$36.29	75	3.8	1	47.4%	13.62	9.6	$105.79	75	14.7	1	9.7%	12.58	0.50
4261536	$29.42	105	7.3	15	44.1%	20.34	17.1	$19.15	95	18.4	15	44.1%	14.30	46.80
4261624	$33.47	105	7.3	1	44.1%	25.82	17.3	$23.36	75	12.9	1	44.1%	12.32	23.80
4261632	$83.31	75	3.9	1	17.8%	16.91	3.9	$71.70	75	14.4	1	17.8%	13.89	3.20
4261648	$30.81	105	7.6	3	45.0%	31.89	11	$14.66	95	20.3	3	45.0%	22.07	30.40
4261688	$32.56	105	7.4	3	42.5%	25.82	14.7	$19.01	95	18.7	3	42.5%	17.93	40.70
4261704	$34.44	85	4.9	1	44.5%	13.76	14	$28.68	75	13.6	1	44.5%	9.41	12.00
4261756	$34.34	105	7.2	1	45.9%	25.81	20.3	$24.71	75	12.7	1	45.9%	12.32	27.60
4261768	$29.56	105	7.3	3	48.2%	23.07	18.5	$19.25	95	18.0	3	48.2%	16.11	50.30
4261773	$40.76	105	7.0	1	41.2%	25.86	21	$32.37	75	12.8	1	41.2%	12.33	22.00
4261774	$45.49	105	6.4	1	49.4%	20.56	35.8	$38.48	95	16.8	1	49.4%	14.44	41.70
4261788	$37.78	105	7.0	2	46.5%	25.22	24	$25.64	95	16.8	2	46.5%	17.53	55.70
4261864	$40.31	85	5.1	1	43.0%	22.8	10.6	$31.29	75	14.1	1	43.0%	15.19	9.50
4261936	$60.75	75	3.6	1	30.6%	12.84	11.5	$52.88	75	13.6	1	30.6%	10.62	9.60
4261968	$96.21	75	4.0	1	13.8%	15.03	3.3	$82.28	75	14.5	1	13.8%	12.37	2.30
4262048	$27.13	105	7.5	1	45.5%	24.37	11.8	$15.65	75	13.8	1	45.5%	11.69	20.80
4262088	$25.95	105	7.4	1	47.7%	20.63	15.1	$17.30	75	13.3	1	47.7%	10.09	22.70
4262128	$33.00	105	7.4	1	44.6%	29.35	14.4	$22.32	75	13.8	1	44.6%	13.84	14.60
4262136	$82.42	75	3.9	1	16.8%	15.02	4	$70.98	75	14.3	1	16.8%	12.36	3.20
4262224	$93.08	75	3.9	1	13.3%	12.66	3.8	$80.81	75	14.3	1	13.3%	10.44	3.10
4262264	$73.63	75	3.9	1	21.4%	15	5.8	$60.09	75	14.2	1	21.4%	12.36	4.50
4262280	$53.38	75	3.9	1	28.7%	16.09	5.7	$46.21	75	14.3	1	28.7%	13.25	4.50
4262304	$42.27	75	3.9	1	43.2%	16.44	8.9	$34.30	75	14.1	1	43.2%	13.54	8.40
4262312	$83.05	75	3.3	1	35.3%	17.28	19.3	$72.98	75	12.6	1	35.3%	14.21	16.70
4262320	$34.95	105	7.5	2	43.7%	32.82	13.3	$17.50	85	16.6	2	43.7%	18.74	30.80
4262340	$120.33	75	4.0	1	13.2%	20.78	2.4	$102.29	75	14.5	1	13.2%	16.97	1.70
4262396	$32.88	105	7.3	2	43.7%	25.82	16.3	$19.57	95	18.8	2	43.7%	17.92	37.50
4262416	$29.19	105	7.5	11	43.4%	25.82	11.5	$14.98	95	19.9	11	43.4%	17.93	31.30
4262432	$29.07	105	7.5	9	45.4%	29.02	9.8	$13.56	95	20.1	9	45.4%	20.18	27.30
4262712	$42.37	75	3.9	1	45.1%	18.23	8.5	$33.87	75	14.1	1	45.1%	15.00	8.10
4262736	$29.22	105	7.5	6	43.8%	25.82	11.8	$15.23	95	19.7	6	43.8%	17.93	32.30
4262744	$111.17	75	3.8	1	15.5%	17.67	5.4	$94.61	75	14.1	1	15.5%	14.49	4.20
4262752	$44.69	85	4.7	1	44.3%	18.62	18.1	$36.79	75	13.2	1	44.3%	12.53	15.80

4262784	$44.53	75	4.0	1	25.7%	11.29	3.8	$38.46	75	14.5	1	25.7%	9.35	2.70
4262792	$29.05	105	7.6	2	42.6%	25.82	11.9	$15.25	95	20.2	2	42.6%	17.91	29.80
4262920	$26.30	105	7.5	5	46.3%	23.7	11.6	$14.19	95	19.6	5	46.3%	16.55	32.20
4263009	$46.15	105	6.6	3	46.2%	23.08	33.9	$34.86	95	14.6	3	46.2%	16.11	79.30
4263011	$65.19	75	3.6	1	29.8%	13.02	12.4	$56.94	75	13.5	1	29.8%	10.76	10.50
4263013	$54.01	75	3.5	1	45.8%	15.36	17.8	$48.58	95	19.6	1	45.8%	18.49	13.30
4263048	$27.63	105	7.5	5	44.4%	25.81	10	$13.40	95	20.0	5	44.4%	17.93	27.60
4263064	$34.36	105	7.3	1	43.5%	25.84	18.3	$24.67	75	13.5	1	43.5%	12.32	18.20
4263116	$40.99	75	3.8	1	43.6%	14.95	9.5	$35.40	75	14.1	1	43.6%	12.34	7.90
4263160	$67.38	75	3.8	1	25.9%	14.99	8.4	$58.36	75	14.0	1	25.9%	12.35	6.90
4263288	$136.23	75	3.9	1	9.6%	15.07	2.8	$116.20	75	14.4	1	9.6%	12.38	2.00
4263312	$153.25	75	4.0	1	7.2%	12.81	1.5	$128.27	75	14.6	1	7.2%	10.56	0.60
4263349	$46.09	85	4.9	1	39.5%	21.12	13.3	$36.92	75	13.7	1	39.5%	14.11	11.40
4263360	$53.71	75	3.8	1	30.4%	12.33	8.9	$46.92	75	13.9	1	30.4%	10.20	7.40
4263408	$37.39	95	6.3	1	43.2%	30.47	10.7	$24.62	75	14.2	1	43.2%	16.78	11.00
4263416	$51.78	75	4.0	1	29.9%	18.53	3.9	$44.35	75	14.6	1	29.9%	15.21	2.80
4263488	$41.77	85	4.8	1	43.5%	18.3	15.7	$34.20	75	13.5	1	43.5%	12.33	13.70
4263496	$48.77	75	3.8	1	36.0%	13.52	9.9	$43.79	75	13.9	1	36.0%	11.17	9.00
4263536	$50.66	75	3.8	1	38.3%	16.26	10.4	$44.34	75	13.9	1	38.3%	13.39	8.70
4263624	$27.50	105	7.6	30	43.9%	25.82	10.8	$13.76	95	20.2	30	43.9%	17.93	29.30
4263664	$32.79	105	7.3	1	43.8%	25.82	16.3	$20.29	85	16.0	1	43.8%	15.02	30.90
4263688	$66.67	75	3.9	1	23.8%	17.63	5.1	$56.93	75	14.3	1	23.8%	14.47	3.90
4263808	$33.33	95	6.2	1	43.7%	21.93	13.3	$25.20	75	13.9	1	43.7%	12.33	13.00
4263840	$29.90	105	7.5	2	43.8%	25.82	12.8	$15.89	95	19.6	2	43.8%	17.91	34.80
4263976	$73.15	75	3.8	1	27.7%	20.55	7.8	$62.69	75	14.1	1	27.7%	16.82	6.40
4264032	$201.33	75	3.9	1	6.7%	15.1	3.1	$169.11	75	14.3	1	6.7%	12.39	2.10
4264056	$114.87	75	3.9	1	11.5%	15.05	3	$98.55	75	14.4	1	11.5%	12.38	2.30
4264072	$31.72	105	7.4	2	43.6%	25.82	14.9	$18.33	95	19.3	2	43.6%	17.91	34.20
4264104	$59.29	75	3.9	1	26.9%	16.59	6.2	$51.16	75	14.2	1	26.9%	13.63	4.90
4264112	$34.50	95	6.2	1	43.6%	21.93	14.4	$26.17	75	13.7	1	43.6%	12.33	14.20
4264184	$34.43	95	6.2	1	43.7%	25.05	11.5	$25.11	75	14.0	1	43.7%	13.93	11.00
4264188	$79.00	75	3.7	1	25.3%	16.58	10.2	$68.31	75	13.7	1	25.3%	13.64	8.50
4264200	$37.62	85	5.0	1	44.4%	18.49	12.8	$29.28	75	13.7	1	44.4%	12.46	13.40
4264224	$34.66	95	6.2	1	43.8%	23.26	13.6	$26.56	75	13.9	1	43.8%	13.01	12.60
4264288	$31.67	75	4.0	1	41.6%	11.89	6.2	$27.80	75	14.4	1	41.6%	9.86	4.80
4264296	$63.24	75	3.9	1	18.9%	11.39	4.3	$55.12	75	14.3	1	18.9%	9.43	3.50
4264368	$36.80	105	7.0	1	45.8%	22.05	25	$27.84	75	12.3	1	45.8%	10.69	28.30
4264376	$33.98	105	7.4	1	46.7%	32.8	14.8	$19.53	75	13.1	1	46.7%	15.25	27.70
4264392	$42.12	85	5.0	1	39.7%	18.31	13.2	$34.25	75	13.8	1	39.7%	12.33	11.30
4264432	$66.23	75	3.8	1	24.9%	14.3	7.6	$57.39	75	14.0	1	24.9%	11.79	6.20
4264440	$251.47	75	4.0	1	4.3%	13.14	1	$210.40	75	14.6	1	4.3%	10.81	0.20
4264464	$32.98	105	7.3	3	43.3%	25.82	16	$19.72	95	18.5	3	43.3%	17.92	43.90
4264488	$65.67	75	3.8	1	27.5%	16.38	8.1	$56.64	75	14.0	1	27.5%	13.48	6.60
4264560	$34.49	95	6.2	1	43.9%	21.93	14.7	$26.36	75	13.8	1	43.9%	12.33	14.20
4264584	$33.52	75	4.0	1	44.2%	14.94	6.3	$26.90	75	14.4	1	44.2%	12.33	5.90
4264784	$24.74	105	7.5	3	47.7%	19.86	14.1	$14.86	95	19.2	3	47.7%	13.97	38.80
4264832	$29.81	105	7.5	3	42.8%	25.82	11.9	$14.98	95	19.9	3	42.8%	17.91	32.30
4264856	$48.23	75	3.8	1	37.4%	14.97	9.7	$42.13	75	14.0	1	37.4%	12.34	8.10
4264904	$39.08	85	5.1	1	41.8%	24.11	8.4	$30.27	75	14.2	1	41.8%	16.00	7.00
4265000	$42.23	75	3.8	1	46.2%	18.6	8.7	$36.13	75	14.2	1	46.2%	15.29	7.40
4265088	$49.68	75	4.0	1	26.1%	14.3	3.7	$42.88	75	14.6	1	26.1%	11.79	2.60
4265112	$46.80	105	6.9	1	44.7%	33.77	25.8	$32.97	75	12.0	1	44.7%	15.67	33.20
4265192	$30.05	105	7.5	2	43.6%	25.82	12.8	$16.39	85	16.5	2	43.6%	15.01	29.10
4265256	$29.78	105	7.5	1	45.6%	26.12	14.1	$18.32	75	13.6	1	45.6%	12.44	20.20
4265336	$31.29	105	7.4	1	43.9%	25.83	14.7	$21.68	75	13.8	1	43.9%	12.32	14.70
4265360	$63.70	75	3.8	1	24.6%	13.67	6.9	$55.06	75	14.1	1	24.6%	11.28	5.50
4265392	$28.57	105	7.5	2	44.0%	24.51	12.6	$15.61	85	16.9	2	44.0%	14.31	27.00

4265496	$88.44	75	3.9	1	16.2%	16.82	3.3	$75.51	75	14.4	1	16.2%	13.81	2.50
4265568	$30.72	95	6.3	1	43.4%	21.92	11.5	$22.30	75	14.2	1	43.4%	12.32	12.00
4265736	$34.51	75	3.9	1	40.4%	11.6	7.6	$30.19	75	14.3	1	40.4%	9.61	6.10
4265848	$102.49	75	3.9	1	12.5%	14.13	3.2	$88.25	75	14.3	1	12.5%	11.63	2.50
4265872	$223.27	75	3.9	1	6.6%	18.34	2.5	$187.10	75	14.4	1	6.6%	14.99	1.50
4265944	$89.45	75	3.9	1	15.7%	16.82	2.9	$76.01	75	14.4	1	15.7%	13.81	1.90
4265976	$121.48	75	4.0	1	10.5%	14.73	2.5	$103.95	75	14.4	1	10.5%	12.11	1.80
4265984	$68.81	75	3.9	1	19.9%	15	3.9	$58.92	75	14.4	1	19.9%	12.36	2.80
4266016	$42.58	75	3.9	1	36.1%	15.63	6.4	$36.92	75	14.4	1	36.1%	12.88	5.10
4266168	$32.06	95	6.2	1	45.4%	21.92	13.2	$23.92	75	13.9	1	45.4%	12.32	13.20
4266192	$50.54	75	3.8	1	36.5%	14.97	10.1	$45.22	75	13.9	1	36.5%	12.35	9.20
4266232	$138.09	75	4.0	1	9.3%	15.83	1.7	$116.11	75	14.5	1	9.3%	12.99	0.80
4266304	$56.68	75	3.7	1	33.6%	14.58	10.9	$49.61	75	13.7	1	33.6%	12.02	9.20
4266320	$74.13	75	3.9	1	23.5%	17.41	6.4	$60.68	75	14.2	1	23.5%	14.30	5.10
4266384	$60.72	75	3.8	1	29.2%	16.38	7.7	$52.27	75	14.1	1	29.2%	13.47	6.20
4266392	$34.07	105	7.3	1	43.6%	25.82	17.7	$22.85	75	12.9	1	43.6%	12.32	26.90
4266408	$37.32	85	4.9	1	42.9%	15.1	14.2	$30.85	75	13.6	1	42.9%	10.27	12.20
4266440	$51.15	75	3.9	1	27.8%	13.53	6.2	$44.50	75	14.2	1	27.8%	11.17	4.90
4266448	$52.06	75	3.8	1	32.1%	14.97	7.5	$43.53	75	14.1	1	32.1%	12.35	6.50
4266472	$46.00	75	3.8	1	41.2%	15.11	10.7	$40.22	75	13.9	1	41.2%	12.46	9.00
4266560	$39.18	75	3.9	1	40.7%	14.96	7.9	$34.25	75	14.3	1	40.7%	12.34	6.40
4266576	$31.34	105	7.5	1	43.3%	25.82	14.4	$18.76	75	13.5	1	43.3%	12.32	24.20
4266696	$144.31	75	3.9	1	10.8%	19.27	2.9	$122.52	75	14.4	1	10.8%	15.75	2.20
4266720	$39.56	85	4.9	1	45.1%	19.72	13.9	$31.74	75	13.7	1	45.1%	13.23	12.40
4266808	$40.28	105	7.0	1	40.9%	24.02	21.7	$32.53	75	12.7	1	40.9%	11.53	22.80
4266832	$35.42	95	6.1	1	43.9%	22.06	15.4	$27.75	75	13.7	1	43.9%	12.39	14.40
4266864	$29.26	105	7.5	2	43.9%	25.82	11.9	$15.42	85	16.6	2	43.9%	15.01	27.70
4266928	$51.22	75	4.0	1	27.2%	14.98	4.7	$44.21	75	14.5	1	27.2%	12.35	3.50
4267120	$38.30	75	3.8	1	46.3%	13.69	10.2	$32.98	75	14.0	1	46.3%	11.32	8.90
4267224	$31.31	105	7.5	1	45.0%	29.71	12.3	$17.22	75	13.7	1	45.0%	13.99	21.50
4267256	$350.93	75	4.0	1	3.4%	16.03	0.3	$324.31	75	14.7	1	3.4%	13.11	1.87
4267304	$33.17	95	6.2	1	43.9%	21.93	13.2	$25.49	75	13.9	1	43.9%	12.33	12.30
4267344	$26.77	105	7.2	11	48.8%	14.76	20.5	$19.92	95	17.2	11	48.8%	10.54	55.40
4267352	$79.11	75	3.8	1	19.8%	14.68	5.8	$69.41	75	14.1	1	19.8%	12.10	5.00
4267384	$64.12	75	3.9	1	22.7%	15.94	4.5	$55.65	75	14.3	1	22.7%	13.11	3.70
4267584	$39.02	75	3.9	1	39.4%	14.49	7.3	$34.19	75	14.3	1	39.4%	11.96	5.90
4267608	$33.42	85	5.0	1	46.5%	17.51	11.4	$26.95	75	14.0	1	46.5%	11.83	10.00
4267616	$99.97	75	3.9	1	11.5%	11.66	3.3	$86.74	75	14.3	1	11.5%	9.63	2.60
4267632	$79.91	75	4.0	1	17.5%	16.23	3.4	$68.40	75	14.5	1	17.5%	13.34	2.60
4267648	$47.70	75	3.9	1	40.6%	22.24	6.9	$41.31	75	14.4	1	40.6%	18.20	5.60
4267656	$33.54	105	7.3	1	43.3%	25.82	17	$21.71	75	13.0	1	43.3%	12.32	27.30
4267712	$30.89	105	7.4	4	43.5%	25.82	13.6	$16.98	95	19.2	4	43.5%	17.93	37.50
4267744	$32.27	105	7.4	1	43.9%	25.82	15.9	$21.56	75	13.5	1	43.9%	12.32	20.20
4267784	$26.28	105	7.4	1	44.2%	15.7	17.3	$21.32	75	13.5	1	44.2%	7.90	16.40
4267848	$57.48	75	3.8	1	29.1%	13.66	8.4	$49.92	75	14.0	1	29.1%	11.28	6.90
4267872	$102.64	75	3.9	1	12.9%	14.87	3.2	$88.23	75	14.3	1	12.9%	12.24	2.50
4267920	$41.24	75	3.9	1	34.3%	14.42	5.2	$36.22	75	14.4	1	34.3%	11.90	4.30
4268036	$30.68	105	7.4	4	45.6%	25.81	15.4	$17.62	95	18.9	4	45.6%	17.93	42.30
4268056	$39.49	85	5.0	1	45.0%	22.05	11.9	$30.34	75	13.8	1	45.0%	14.71	12.20
4268072	$41.92	75	3.9	1	38.5%	15.71	7.5	$36.64	75	14.3	1	38.5%	12.95	6.10
4268088	$33.17	105	7.3	1	43.9%	25.85	17.1	$24.40	75	13.6	1	43.9%	12.32	16.10
4268096	$27.46	105	7.5	4	45.9%	25.81	11.2	$14.16	95	19.8	4	45.9%	17.94	30.80
4268104	$41.32	75	3.8	1	44.0%	14.55	10.1	$36.09	75	14.0	1	44.0%	12.02	8.40
4268144	$53.41	75	3.5	1	43.8%	14.95	16.5	$44.56	75	13.1	1	36.1%	12.34	15.70
4268152	$87.26	75	3.9	1	14.6%	13.76	3.5	$74.63	75	14.4	1	14.6%	11.35	2.40
4268188	$35.49	105	7.2	2	43.6%	26.44	19.2	$22.68	95	18.5	2	43.6%	18.33	42.30
4268192	$34.19	105	7.2	1	45.0%	25.81	19.2	$23.11	85	15.7	1	45.0%	15.02	32.40

4268200	$55.13	75	3.6	1	40.3%	14.97	14.9	$48.40	75	13.4	1	40.3%	12.34	12.80
4268248	$140.67	75	3.9	1	9.3%	15.07	2.8	$120.53	75	14.4	1	9.3%	12.38	2.10
4268312	$30.34	105	7.6	2	44.4%	29.02	11.3	$15.23	85	16.7	2	44.4%	16.63	26.30
4268328	$40.76	75	3.9	1	43.3%	14.95	9.2	$35.11	75	14.2	1	43.3%	12.34	7.90
4268376	$38.16	85	5.0	1	43.7%	18.3	12.9	$30.73	75	13.8	1	43.7%	12.33	11.40
4268432	$27.27	105	7.5	2	43.9%	22.48	12.5	$14.88	95	19.8	2	43.9%	15.71	34.00
4269000	$22.76	105	7.6	43	46.3%	18.9	11	$12.28	95	20.0	43	46.3%	13.34	30.20
4269216	$33.23	105	7.4	2	44.4%	31.67	12.3	$16.86	95	19.5	2	44.4%	21.92	34.70
4269248	$31.39	105	7.4	1	43.7%	25.82	14.7	$18.92	75	13.4	1	43.7%	12.32	25.20
4269256	$82.11	75	4.0	1	16.4%	17.01	1.9	$69.48	75	14.6	1	16.4%	13.97	1.10
4269272	$30.75	105	7.2	1	46.6%	23.35	18.2	$22.96	75	13.3	1	46.6%	11.25	18.40
4269309	$30.37	105	7.5	1	44.7%	27.55	12.8	$18.80	75	13.8	1	44.7%	12.99	17.20
4269336	$43.84	75	3.7	1	38.2%	11.01	10.6	$39.80	75	13.7	1	38.2%	9.13	9.70
4269360	$76.42	75	3.9	1	18.4%	15.01	4.5	$64.93	75	14.4	1	18.4%	12.36	3.30
4269368	$66.80	75	3.9	1	19.6%	14.09	3.7	$56.82	75	14.4	1	19.6%	11.62	2.60
4269376	$33.40	105	7.4	1	44.0%	29.52	14.3	$18.44	75	13.4	1	44.0%	13.91	27.10
4269400	$73.38	85	4.1	1	43.0%	20.34	30.4	$65.08	75	11.4	1	43.0%	13.61	29.80
4269416	$75.63	75	3.5	1	30.9%	16.58	14.5	$65.73	75	13.2	1	30.9%	13.64	12.40
4269456	$328.71	75	4.0	1	3.6%	15.66	0.2	$305.68	75	14.7	1	3.6%	12.82	1.87
4269600	$29.96	105	7.6	4	45.0%	32.81	8.9	$13.21	95	20.7	4	45.0%	22.65	24.20
4269616	$37.57	105	7.2	1	44.5%	31.45	18.2	$25.94	75	13.4	1	44.5%	14.70	18.50
4269680	$89.36	75	4.0	1	13.3%	13.98	2	$75.99	75	14.6	1	13.3%	11.51	1.20
4269715	$29.49	105	7.2	3	45.4%	20.15	18.3	$19.84	95	17.9	3	45.4%	14.16	49.90
4269720	$25.11	105	7.6	10	45.2%	21.8	11	$13.07	95	20.0	10	45.2%	15.27	30.30
4269752	$28.87	105	7.6	2	42.6%	25.82	11.6	$15.47	85	17.1	2	42.6%	15.01	24.90
4269776	$30.89	105	7.5	1	43.3%	29.88	11.2	$16.21	75	14.0	1	43.3%	14.08	20.60
4269800	$26.39	105	7.5	2	45.5%	21.68	13.2	$14.95	95	19.5	2	45.5%	15.18	36.10
4269816	$72.39	75	3.9	1	21.7%	15	5.8	$59.08	75	14.2	1	21.7%	12.36	4.50
4269832	$34.43	105	7.3	1	46.5%	32.56	15.3	$20.83	75	13.4	1	46.5%	15.16	21.30
4269936	$111.83	75	4.0	1	10.1%	13.14	1.8	$95.19	75	14.6	1	10.1%	10.84	1.00
4269952	$56.02	75	4.0	1	27.9%	18.29	4.4	$47.93	75	14.5	1	27.9%	15.02	3.20
4269984	$30.59	95	6.2	1	43.3%	16.86	14.3	$24.74	75	13.7	1	43.3%	9.68	13.30
4270040	$292.46	75	4.0	1	4.9%	19.24	1	$241.29	75	14.6	1	4.9%	15.69	0.10
4270056	$28.77	105	7.6	3	46.7%	31.88	9.4	$13.13	95	20.5	3	46.7%	22.08	26.10
4270064	$31.86	95	6.4	1	47.6%	27.25	10.2	$22.42	75	14.2	1	47.6%	14.98	9.20
4270128	$122.53	75	4.0	1	11.5%	18.87	1.1	$102.56	75	14.6	1	11.5%	15.45	0.30
4270224	$40.51	75	3.9	1	44.9%	18.25	8.3	$34.54	75	14.2	1	44.9%	15.00	7.10
4270248	$27.38	105	7.6	3	43.6%	25.82	10.2	$13.63	95	20.1	3	43.6%	17.92	28.00
4270256	$31.08	105	7.4	6	43.4%	25.82	13.8	$17.11	95	19.2	6	43.4%	17.93	37.90
4270304	$32.54	95	6.2	1	44.4%	20.74	13.6	$25.55	75	13.7	1	44.4%	11.71	12.70
4270352	$32.57	105	7.4	2	43.6%	25.82	16.3	$18.96	95	19.0	2	43.6%	17.91	42.40
4270362	$162.43	75	3.9	1	8.0%	15.08	2.4	$136.86	75	14.4	1	8.0%	12.39	1.40
4270368	$40.63	75	3.9	1	33.5%	13.25	5.4	$35.85	75	14.4	1	33.5%	10.95	4.50
4270376	$195.51	75	3.7	1	8.5%	13.68	7.3	$167.25	75	13.6	1	8.5%	11.25	5.80
4270384	$32.55	85	5.1	1	43.6%	18.3	9.6	$25.46	75	14.3	1	43.6%	12.33	9.20
4270408	$232.84	75	4.0	1	5.8%	17.67	1.1	$192.67	75	14.6	1	5.8%	14.44	0.20
4270464	$35.17	85	5.1	1	43.8%	18.3	10.6	$27.48	75	14.0	1	43.8%	12.33	9.60
4270568	$33.88	105	7.3	1	44.2%	25.81	18.3	$21.99	85	16.0	1	44.2%	15.02	32.30
4270640	$68.79	75	3.8	1	23.6%	14.83	6.5	$60.74	75	14.0	1	23.6%	12.22	5.80
4270652	$34.68	105	7.1	3	47.7%	26.58	20.3	$22.34	95	17.4	3	47.7%	18.44	55.10
4270664	$247.77	75	4.0	1	5.9%	19.87	1	$205.29	75	14.6	1	5.9%	16.22	0.20
4270704	$50.33	75	3.6	1	46.8%	18.02	14.3	$41.97	75	13.4	1	46.8%	14.81	13.30
4270744	$48.44	75	3.9	1	29.9%	14.97	5.5	$41.99	75	14.4	1	29.9%	12.35	4.30
4270840	$40.71	95	6.1	1	46.3%	33.15	13.7	$28.26	75	13.7	1	46.3%	18.04	13.80
4270880	$30.99	105	7.4	1	43.6%	25.82	14	$17.80	75	13.3	1	43.6%	12.31	26.40
4271008	$33.58	105	7.3	1	43.3%	25.82	16.9	$21.32	85	15.9	1	43.3%	15.02	30.90
4271032	$37.10	105	7.1	1	44.1%	25.82	20.5	$23.85	85	15.0	1	44.1%	15.02	40.90

4271056	$158.81	75	3.9	1	10.1%	19.68	3.3	$135.08	75	14.3	1	10.1%	16.08	2.60
4271080	$74.06	75	3.9	1	18.5%	15.01	3.9	$62.95	75	14.4	1	18.5%	12.36	2.80
4271144	$30.70	105	7.5	1	44.1%	25.82	14.2	$17.68	85	16.5	1	44.1%	15.02	29.10
4271160	$90.17	75	3.9	1	18.1%	19.2	4.3	$77.56	75	14.3	1	18.1%	15.73	3.50
4271176	$40.81	75	3.8	1	43.0%	13.7	9.8	$35.68	75	14.0	1	43.0%	11.32	8.10
4271184	$26.34	105	7.4	1	45.8%	20.15	14.7	$17.36	75	13.5	1	45.8%	9.87	22.00
4271210	$55.01	75	3.9	1	21.1%	11.87	3.1	$47.72	75	14.3	1	21.1%	9.82	2.40
4271232	$47.51	75	3.9	1	30.9%	11.91	7	$39.06	75	14.2	1	30.9%	9.86	5.60
4271248	$29.27	105	7.2	1	47.9%	21.6	18.9	$22.30	75	13.2	1	47.9%	10.50	19.30
4271256	$562.14	75	4.0	1	2.4%	18.13	0.7	$505.17	75	14.6	1	2.4%	14.77	1.87
4271320	$43.95	75	3.8	1	35.3%	11.8	8.5	$39.34	75	14.1	1	35.3%	9.77	7.50
4271424	$52.49	75	4.0	1	27.1%	16.58	3.7	$45.04	75	14.6	1	27.1%	13.63	2.60
4271456	$59.52	75	3.8	1	30.8%	16.66	8.3	$51.64	75	14.0	1	30.8%	13.71	6.80
4271504	$66.80	75	4.0	1	20.0%	15	3.4	$57.77	75	14.5	1	20.0%	12.36	2.60
4271600	$51.86	75	3.8	1	36.3%	17.81	8.1	$45.96	75	14.1	1	36.3%	14.64	7.20
4271688	$147.27	75	3.6	1	14.1%	20.06	7.6	$128.86	75	13.6	1	14.1%	16.40	7.10
4271694	$99.06	75	3.6	1	23.6%	23.78	8.7	$87.08	75	13.8	1	23.6%	19.57	8.00
4271776	$21.30	105	7.5	5	47.1%	17.33	10.6	$12.27	95	19.7	5	47.1%	12.29	29.70
4271848	$42.23	75	3.9	1	34.7%	14.97	5.7	$36.99	75	14.4	1	34.7%	12.35	4.70
4271856	$28.86	105	7.5	3	43.7%	25.82	11.2	$14.34	95	19.9	3	43.7%	17.92	30.60
4271976	$51.20	75	4.0	1	31.7%	19.28	4.4	$44.24	75	14.5	1	31.7%	15.82	3.50
4272072	$40.19	85	5.0	1	41.9%	18.31	13.3	$32.66	75	13.8	1	41.9%	12.33	11.50
4272080	$28.34	105	7.4	1	44.1%	19.72	16.4	$21.05	75	13.6	1	44.1%	9.68	17.20
4272168	$37.70	75	3.9	1	45.2%	14.86	8.2	$29.50	75	14.2	1	45.2%	12.27	7.50
4272192	$26.34	105	7.5	1	43.8%	19.78	13.5	$17.32	75	13.7	1	43.8%	9.72	19.20
4272216	$77.57	75	3.9	1	19.7%	16.6	5	$66.33	75	14.3	1	19.7%	13.65	3.80
4272344	$28.89	105	7.4	1	45.6%	24.09	14.5	$18.01	75	13.4	1	45.6%	11.58	21.90
4272376	$42.64	75	3.9	1	31.5%	11.85	6.4	$37.55	75	14.3	1	31.5%	9.82	5.40
4272403	$34.22	105	7.3	7	43.9%	28.5	16.1	$19.81	95	18.7	7	43.9%	19.68	44.40
4272416	$55.21	75	3.9	1	24.7%	14.37	4.5	$47.54	75	14.4	1	24.7%	11.85	3.40
4272432	$37.79	105	7.2	1	43.3%	25.85	20.6	$27.43	75	13.1	1	43.3%	12.32	20.20
4272448	$50.01	75	4.0	1	30.3%	17.17	4.5	$42.94	75	14.5	1	30.3%	14.12	3.30
4272520	$29.06	105	7.6	1	43.3%	25.84	11.3	$19.03	75	14.2	1	43.3%	12.32	10.80
4272552	$28.54	105	7.5	1	44.3%	26.45	10.8	$19.25	75	14.2	1	44.3%	12.58	10.50
4272576	$90.87	75	3.9	1	14.7%	13.56	4.6	$77.96	75	14.3	1	14.7%	11.19	3.40
4272592	$35.65	85	5.0	1	46.0%	18.19	12.5	$28.48	75	13.8	1	46.0%	12.26	11.10
4272616	$24.91	105	7.6	1	43.7%	20.75	11.8	$16.76	75	14.2	1	43.7%	10.13	15.00
4272648	$27.19	105	7.5	3	44.8%	22.24	13.2	$15.39	95	19.4	3	44.8%	15.56	36.40
4272704	$76.53	75	3.9	1	17.4%	14.4	3.8	$65.94	75	14.4	1	17.4%	11.86	3.00
4272736	$35.02	95	6.2	1	40.6%	20.75	13.4	$27.26	75	13.9	1	40.6%	11.71	12.40
4272768	$34.92	95	6.1	1	44.5%	21.92	15.3	$26.01	75	13.5	1	44.5%	12.33	15.90
4272872	$62.99	75	3.9	1	21.1%	14.16	4	$54.05	75	14.4	1	21.1%	11.68	2.90
4272920	$31.93	105	7.4	1	43.1%	25.82	15	$21.07	75	13.7	1	43.1%	12.32	18.20
4272960	$34.29	105	7.5	2	43.3%	31.45	13.2	$17.87	85	16.7	2	43.3%	18.02	28.60
4273192	$33.85	105	7.4	1	42.9%	25.85	17.1	$24.72	75	13.7	1	42.9%	12.32	16.00
4273224	$32.88	85	5.0	1	46.5%	17.51	11	$25.66	75	13.9	1	46.5%	11.83	10.30
4273264	$33.46	105	7.3	2	43.3%	25.82	16.5	$20.52	95	18.7	2	43.3%	17.92	35.90
4273288	$128.79	75	3.9	1	12.7%	21.09	2.7	$109.17	75	14.4	1	12.7%	17.22	1.90
4273296	$57.27	75	4.0	1	23.8%	14.99	4	$49.07	75	14.5	1	23.8%	12.35	2.90
4273312	$31.00	105	7.5	1	42.8%	25.85	13.4	$22.20	75	14.0	1	42.8%	12.32	12.40
4273318	$41.44	75	3.8	1	43.8%	14.94	9.7	$33.32	75	13.9	1	37.8%	12.33	9.30
4273528	$31.97	105	7.4	2	44.0%	25.82	15.5	$18.91	95	18.7	2	44.0%	17.91	42.70
4273704	$86.74	75	3.7	1	18.8%	12.36	8.4	$77.27	75	13.7	1	18.8%	10.21	7.70
4273720	$57.93	75	3.8	1	31.6%	17.83	7.5	$48.73	75	14.2	1	31.6%	14.64	6.60
4273784	$135.00	75	3.4	1	17.2%	15.88	12.1	$121.12	85	16.2	1	17.2%	15.96	9.90
4273808	$31.00	105	7.5	10	45.8%	31.45	11.2	$14.69	95	20.1	10	45.8%	21.80	31.00
4273848	$39.37	105	7.1	1	43.0%	25.84	22.2	$28.68	75	12.8	1	43.0%	12.32	24.20

4273888	$30.82	105	7.5	2	43.2%	25.82	13.4	$16.75	95	19.5	2	43.2%	17.91	35.90
4274040	$81.27	75	3.8	1	19.4%	15.01	5.8	$69.91	75	14.1	1	19.4%	12.36	4.50
4274104	$32.59	105	7.4	1	44.0%	25.84	16.6	$23.77	75	13.7	1	44.0%	12.32	15.60
4274160	$33.89	75	3.9	1	43.9%	14.94	6.2	$28.35	75	14.4	1	43.9%	12.33	5.20
4274184	$131.06	75	3.7	1	14.5%	18.13	7.1	$114.63	75	13.7	1	14.5%	14.86	6.50
4274224	$50.23	75	3.9	1	30.1%	16.09	5.4	$43.50	75	14.4	1	30.1%	13.25	4.40
4274232	$48.62	75	3.8	1	38.4%	14.97	10.6	$42.71	75	13.9	1	38.4%	12.34	8.90
4274288	$36.76	85	4.9	1	46.0%	15.9	15.3	$30.10	75	13.5	1	46.0%	10.79	13.80
4274360	$65.80	75	3.9	1	21.9%	15.75	4.4	$56.87	75	14.4	1	21.9%	12.96	3.50
4274416	$32.44	105	7.3	1	43.6%	25.82	15.6	$20.62	75	13.0	1	43.6%	12.32	25.30
4274448	$41.75	75	3.9	1	40.7%	14.96	8.1	$34.67	75	14.2	1	40.7%	12.34	6.60
4274544	$40.85	105	6.9	1	46.6%	28.01	25.8	$29.99	85	15.1	1	46.6%	16.16	33.00
4274568	$62.67	75	3.7	1	28.9%	14.98	9.2	$54.31	75	13.9	1	28.9%	12.35	7.60
4274660	$32.34	105	7.4	1	43.3%	25.82	15.6	$19.44	75	13.2	1	43.3%	12.32	28.40
4274672	$61.33	75	4.0	1	18.1%	11.08	3.3	$53.16	75	14.5	1	18.1%	9.18	2.50
4274712	$33.00	105	7.4	1	43.5%	25.82	16.6	$22.68	75	13.5	1	43.5%	12.32	20.10
4274728	$45.04	75	3.9	1	30.4%	12.49	6.3	$39.15	75	14.3	1	30.4%	10.33	4.90
4274744	$86.20	75	4.0	1	14.6%	15.03	2.3	$73.20	75	14.6	1	14.6%	12.36	1.30
4274848	$71.26	75	3.7	1	31.8%	20.83	10.6	$61.51	75	13.7	1	31.8%	17.06	8.90
4274864	$120.01	75	4.0	1	11.5%	18.63	1.1	$100.53	75	14.7	1	11.5%	15.25	0.30
4274888	$26.15	105	7.6	4	43.7%	25.82	8.3	$12.42	95	20.2	4	43.7%	17.93	22.90
4274944	$36.07	95	6.1	1	44.1%	23.68	14.8	$27.31	75	13.6	1	44.1%	13.22	14.50
4275000	$39.25	105	6.8	4	46.4%	22.47	27.8	$28.64	95	15.6	4	46.4%	15.71	67.50
4275024	$41.69	75	3.9	1	38.6%	13.78	7.6	$35.30	75	14.1	1	38.6%	11.38	6.70
4275072	$41.60	75	3.9	1	45.4%	18.01	8.3	$33.20	75	14.1	1	45.4%	14.81	7.80
4275136	$51.01	75	3.9	1	28.3%	14.36	5.8	$44.21	75	14.3	1	28.3%	11.85	4.50
4275168	$51.74	75	3.8	1	36.4%	17.92	8	$45.81	75	14.1	1	36.4%	14.73	7.10
4275248	$34.45	105	7.2	1	47.0%	30.07	17.7	$21.49	85	15.8	1	47.0%	17.35	32.00
4275272	$202.35	75	3.8	1	7.5%	15.09	4.5	$171.89	75	14.1	1	7.5%	12.39	3.30
4275304	$30.79	105	7.6	6	44.6%	32.35	10	$14.32	95	20.3	6	44.6%	22.36	27.90
4275381	$36.33	95	6.0	1	44.9%	21.33	17.3	$28.89	75	13.3	1	44.9%	12.01	16.40
4275432	$39.17	105	7.0	1	46.2%	27.86	23.5	$26.82	75	11.6	1	46.2%	13.14	39.10
4275568	$29.92	105	7.4	1	46.5%	25.83	15.2	$21.78	75	13.8	1	46.5%	12.32	14.50
4275574	$43.85	105	6.9	1	43.0%	25.82	27.2	$31.67	85	14.8	1	43.0%	15.02	38.60
4275584	$59.05	75	3.9	1	31.7%	21.29	6.3	$51.21	75	14.3	1	31.7%	17.42	5.40
4275648	$32.04	105	7.4	2	42.6%	25.82	14.4	$18.25	85	16.2	2	42.6%	15.01	33.10
4275664	$32.81	105	7.3	1	43.6%	25.82	16.2	$21.83	75	13.3	1	43.6%	12.32	21.70
4275728	$94.49	75	3.9	1	16.1%	14.7	5	$76.08	75	14.2	1	16.1%	12.11	3.70
4275816	$33.16	105	7.6	5	43.6%	35.05	10.1	$14.78	95	20.6	5	43.6%	24.05	27.50
4275832	$32.42	105	7.5	3	45.5%	32.34	12.1	$15.92	95	20.0	3	45.5%	22.36	33.50
4275888	$29.75	95	6.2	1	46.6%	18.78	14.1	$22.77	75	13.7	1	46.6%	10.69	14.40
4275944	$88.42	75	4.0	1	15.0%	15.18	3.2	$75.21	75	14.4	1	15.0%	12.49	2.10
4275968	$494.05	75	4.0	1	2.3%	15.21	0.1	$462.47	75	14.7	1	2.3%	12.44	1.88
4276032	$30.24	105	7.5	3	46.7%	30.07	11.9	$15.25	85	16.7	3	46.7%	17.38	27.90
4276104	$34.15	105	7.5	2	43.7%	31.24	13.7	$17.53	85	16.6	2	43.7%	17.91	31.80
4276144	$41.60	75	3.8	1	44.2%	14.95	10.2	$36.14	75	14.0	1	44.2%	12.34	8.60
4276184	$30.60	105	7.4	3	45.6%	25.96	15.1	$17.38	95	18.9	3	45.6%	18.03	41.30
4276232	$207.01	75	3.9	1	6.5%	15.96	2.5	$172.87	75	14.4	1	6.5%	13.08	1.50
4276304	$30.17	105	7.5	1	44.0%	25.82	13.5	$16.95	85	16.7	1	44.0%	15.02	27.90
4276320	$29.11	105	7.6	1	43.2%	25.84	11.3	$19.66	75	14.2	1	43.2%	12.32	10.30
4276336	$64.93	75	3.9	1	22.7%	16.5	4.3	$56.22	75	14.4	1	22.7%	13.56	3.50
4276400	$37.00	75	3.9	1	43.8%	14.94	8.4	$30.08	75	14.2	1	43.8%	12.33	8.00
4276432	$74.52	75	4.0	1	20.1%	18.81	2.8	$63.15	75	14.6	1	20.1%	15.42	1.80
4276440	$27.81	105	7.4	4	47.4%	21.79	16.5	$17.57	95	18.6	4	47.4%	15.28	45.20
4276496	$71.83	75	3.9	1	19.6%	15.94	3.7	$61.30	75	14.4	1	19.6%	13.12	2.60
4276536	$60.52	75	3.9	1	25.3%	16.48	5.4	$52.25	75	14.3	1	25.3%	13.56	4.20
4276552	$28.65	105	7.4	2	43.9%	23.72	12.7	$16.05	95	19.1	2	43.9%	16.52	35.60

4276560	$77.11	75	3.9	1	20.4%	17.43	4.9	$67.03	75	14.3	1	20.4%	14.31	4.20
4276584	$33.63	105	7.3	1	43.4%	25.82	17.1	$21.09	85	15.9	1	43.4%	15.02	31.90
4276632	$94.84	75	3.9	1	15.6%	16.24	4.5	$80.83	75	14.3	1	15.6%	13.35	3.30
4276648	$28.49	105	7.4	2	46.2%	22.83	15.6	$17.18	95	18.9	2	46.2%	15.95	41.40
4276696	$35.98	85	5.0	1	41.2%	16.15	11.3	$29.49	75	14.0	1	41.2%	10.95	9.60
4276724	$71.77	75	3.9	1	20.3%	15	5.3	$62.72	75	14.2	1	20.3%	12.36	4.50
4276744	$117.93	75	3.9	1	11.3%	14.81	3.3	$101.44	75	14.3	1	11.3%	12.18	2.60
4276808	$42.17	75	3.9	1	34.8%	14.89	5.7	$37.08	75	14.3	1	34.8%	12.27	4.80
4276848	$51.13	75	3.9	1	30.6%	13.33	7.2	$44.35	75	14.1	1	30.6%	11.01	5.80
4276880	$47.53	75	3.6	1	44.7%	13.77	14.8	$41.07	75	13.4	1	44.7%	11.37	13.30
4276904	$25.82	105	7.5	4	46.7%	24.37	10.7	$13.44	95	19.9	4	46.7%	17.00	29.70
4277016	$37.86	85	5.0	1	46.1%	21.76	11.6	$28.66	75	13.9	1	46.1%	14.53	11.90
4277104	$31.83	105	7.4	1	42.7%	25.85	14.2	$22.99	75	13.9	1	42.7%	12.32	13.30
4277144	$53.41	75	3.6	1	39.2%	14.97	13.3	$46.96	75	13.6	1	39.2%	12.34	11.30
4277163	$39.26	105	6.9	2	48.2%	25.07	27.8	$27.59	95	15.9	2	48.2%	17.42	67.50
4277168	$29.39	105	7.4	1	46.1%	23.83	15.8	$19.16	75	13.1	1	46.1%	11.47	27.90
4277184	$32.34	95	6.3	1	44.1%	24.42	10.4	$23.13	75	14.2	1	44.1%	13.61	9.40
4277232	$73.37	75	4.0	1	16.8%	13.37	3.2	$63.12	75	14.5	1	16.8%	11.03	2.40
4277272	$25.61	105	7.5	1	43.5%	18.98	13	$15.65	75	13.6	1	43.5%	9.36	24.40
4277288	$41.38	85	5.0	1	40.0%	18.31	13	$33.70	75	13.9	1	40.0%	12.33	11.20
4277304	$34.58	105	7.3	1	43.6%	25.82	18.5	$23.70	75	12.9	1	43.6%	12.32	26.90
4277335	$35.98	105	6.8	3	47.9%	18.47	28.8	$27.39	95	15.6	3	47.9%	13.04	69.50
4277392	$34.47	95	6.2	1	45.1%	24.57	13.2	$25.78	75	13.9	1	45.1%	13.69	12.60
4277424	$40.17	75	3.8	1	49.0%	18.25	9.2	$34.97	75	14.1	1	49.0%	15.00	7.70
4277448	$38.89	105	7.2	1	45.2%	32.8	19.4	$26.49	75	13.0	1	45.2%	15.27	24.90
4277456	$28.85	105	7.5	2	42.7%	25.82	10.2	$14.72	85	16.9	2	42.7%	15.01	22.60
4277488	$46.92	85	4.7	1	44.0%	18.3	18.4	$36.51	75	13.0	1	44.0%	12.33	16.90
4277520	$32.13	105	7.4	3	43.3%	25.82	15.1	$18.33	95	18.9	3	43.3%	17.91	41.60
4277568	$86.14	75	4.0	1	13.8%	12.7	3.1	$74.12	75	14.4	1	13.8%	10.49	2.30
4277576	$127.85	75	3.9	1	10.3%	14.89	3	$109.72	75	14.3	1	10.3%	12.24	2.30
4277584	$29.88	95	6.3	1	46.7%	21.07	12.3	$21.91	75	13.9	1	46.7%	11.89	12.60
4277656	$36.41	105	7.2	1	46.4%	32.56	17.8	$23.57	75	13.0	1	46.4%	15.17	24.90
4277704	$39.36	75	3.9	1	37.9%	14.96	6.3	$34.18	75	14.4	1	37.9%	12.34	5.00
4277744	$39.30	95	6.0	1	42.8%	21.94	18.5	$31.33	75	13.4	1	42.8%	12.33	17.50
4277784	$33.59	105	7.3	1	45.6%	29.88	15.6	$23.28	75	13.7	1	45.6%	14.09	15.40
4277808	$61.63	75	4.0	1	21.3%	14.76	3.3	$52.82	75	14.5	1	21.3%	12.16	2.30
4277832	$41.71	75	3.9	1	39.2%	15.89	7.7	$36.46	75	14.3	1	39.2%	13.09	6.30
4277912	$35.56	105	7.5	3	43.2%	37.6	10.5	$15.83	95	20.3	3	43.2%	25.64	28.80
4277968	$47.53	85	4.8	1	39.2%	21.11	13.7	$180.48	75	14.7	1	5.8%	11.89	1.86
4278008	$111.58	75	3.9	1	12.3%	14.5	4.2	$96.62	75	14.2	1	12.3%	11.93	3.50
4278115	$31.94	105	7.4	1	43.8%	25.83	15.2	$22.24	75	13.6	1	43.8%	12.32	15.40
4278120	$125.41	75	3.9	1	10.5%	15.64	2.3	$107.02	75	14.4	1	10.5%	12.85	1.60
4278168	$27.61	105	7.5	3	45.2%	24.65	11.9	$14.60	95	19.7	3	45.2%	17.15	32.50
4278240	$41.84	75	3.7	1	40.1%	11.22	10.5	$37.94	75	13.8	1	40.1%	9.31	9.60
4278448	$29.91	105	7.3	1	47.1%	24.5	16.9	$19.81	75	13.0	1	47.1%	11.75	29.40
4278456	$82.65	75	3.8	1	22.4%	18.56	6.6	$70.88	75	14.0	1	22.4%	15.22	5.30
4278472	$65.02	75	4.0	1	20.9%	15	3.9	$56.39	75	14.5	1	20.9%	12.36	3.10
4278528	$25.58	105	7.6	9	44.0%	25.08	8.7	$12.22	95	20.4	9	44.0%	17.45	23.60
4278608	$37.48	85	4.9	1	38.9%	12.49	13.4	$32.61	75	13.5	1	38.9%	8.60	12.60
4278616	$95.71	75	4.0	1	14.9%	17.46	2.8	$81.14	75	14.5	1	14.9%	14.31	1.80
4278712	$31.27	105	7.5	1	42.7%	25.83	13.8	$21.34	75	14.0	1	42.7%	12.32	15.10
4279016	$58.05	75	3.7	1	36.5%	20.23	9.3	$51.48	75	13.9	1	36.5%	16.58	8.50
4279277	$31.04	105	7.4	12	43.8%	26.44	13.6	$16.98	95	19.2	12	43.8%	18.34	37.50
4279424	$121.79	75	3.9	1	12.2%	14.97	4.2	$99.61	75	14.2	1	12.2%	12.31	3.60
4279472	$128.35	75	3.9	1	10.6%	13.14	4	$105.57	75	14.2	1	10.6%	10.84	3.40
4279504	$69.24	75	3.9	1	20.6%	16.13	3.9	$59.60	75	14.4	1	20.6%	13.26	3.00
4279640	$33.35	105	7.3	1	43.4%	25.82	16.9	$21.61	75	13.1	1	43.4%	12.32	26.10

4279644	$533.89	75	4.0	1	2.3%	15.8	0.5	$489.67	75	14.6	1	2.3%	12.92	1.87
4279680	$39.98	105	7.1	1	44.7%	29.35	21.6	$28.50	75	12.9	1	44.7%	13.84	22.90
4279682	$28.97	105	7.5	2	43.7%	25.82	11.4	$15.28	85	16.8	2	43.7%	15.01	25.00
4279768	$62.28	75	4.0	1	21.3%	14.68	3.7	$53.27	75	14.5	1	21.3%	12.10	2.60
4279776	$33.74	105	7.5	3	44.0%	35.32	10.8	$15.51	95	20.2	3	44.0%	24.22	29.70
4279792	$51.92	75	3.8	1	40.7%	21.58	8.4	$44.89	75	14.1	1	40.7%	17.67	6.90
4279872	$78.55	75	4.0	1	15.7%	12.94	3.7	$68.33	75	14.4	1	15.7%	10.68	2.90
4279912	$84.29	75	4.0	1	14.6%	13.83	2.9	$72.10	75	14.5	1	14.6%	11.40	1.90
4280032	$31.95	105	7.5	1	43.1%	27.7	13.5	$20.43	75	14.0	1	43.1%	13.07	16.30
4280040	$38.11	95	6.3	1	43.0%	29.3	11.5	$25.97	75	14.2	1	43.0%	16.10	11.00
4280144	$107.13	75	3.9	1	12.7%	15.46	3.3	$91.62	75	14.3	1	12.7%	12.70	2.50
4280218	$30.23	105	7.5	4	42.9%	25.82	12.4	$15.93	95	19.7	4	42.9%	17.93	34.00
4280229	$31.27	105	7.4	1	43.1%	25.82	13.9	$17.92	85	16.5	1	43.1%	15.02	28.80
4280264	$32.61	105	7.2	1	46.3%	21.82	20.5	$24.81	75	13.0	1	46.3%	10.59	21.60
4280288	$46.34	75	3.9	1	27.0%	11.62	5.2	$40.15	75	14.4	1	27.0%	9.62	4.00
4280336	$94.34	75	3.8	1	16.5%	15.02	5.4	$78.06	75	14.1	1	16.5%	12.36	4.70
4280368	$159.80	75	4.0	1	6.7%	13.05	0.8	$147.10	75	14.7	1	6.7%	10.75	1.85
4280384	$163.62	75	3.7	1	9.8%	14.45	6	$139.87	75	13.8	1	9.8%	11.88	4.70
4280432	$210.79	75	3.9	1	6.8%	16.32	3.4	$176.24	75	14.2	1	6.8%	13.38	2.30
4280480	$80.65	75	3.7	1	21.5%	15	8	$69.64	75	13.9	1	21.5%	12.36	6.50
4280600	$49.80	75	3.9	1	32.8%	16.57	6.9	$43.66	75	14.3	1	32.8%	13.63	5.90
4280640	$105.30	75	3.9	1	13.4%	13.45	4.3	$85.86	75	14.2	1	13.4%	11.08	3.60
4280652	$27.28	105	7.4	2	46.9%	21.79	15.4	$16.93	85	16.0	2	46.9%	12.84	35.80
4280656	$410.62	75	3.8	1	4.1%	17.6	4.6	$344.63	75	14.0	1	4.1%	14.38	3.40
4280800	$34.05	105	7.3	1	43.5%	25.85	17.8	$25.16	75	13.6	1	43.5%	12.32	16.80
4280808	$72.91	75	3.9	1	19.0%	15.01	4.1	$62.85	75	14.3	1	19.0%	12.36	3.30
4280880	$42.36	75	3.8	1	37.6%	11.6	9.5	$37.28	75	14.1	1	37.6%	9.61	7.90
4280896	$60.64	75	3.8	1	30.0%	18.29	6.8	$52.42	75	14.2	1	30.0%	15.02	5.50
4280962	$29.29	105	7.5	1	43.4%	25.82	11.6	$16.88	75	13.9	1	43.4%	12.32	17.20
4281000	$22.00	105	7.6	7	46.3%	18.48	10.2	$11.77	95	20.0	7	46.3%	13.06	28.30
4281080	$52.43	75	3.9	1	31.3%	18.17	5.5	$44.99	75	14.4	1	31.3%	14.92	4.20
4281328	$20.31	105	7.6	11	44.3%	17.34	8.5	$10.73	95	20.4	11	44.3%	12.29	23.30
4281360	$58.44	75	3.7	1	32.5%	14.97	10.5	$52.35	75	13.8	1	32.5%	12.35	9.60
4281424	$99.28	75	4.0	1	13.7%	17.67	1.6	$83.84	75	14.6	1	13.7%	14.49	0.70
4281456	$35.63	85	4.8	1	47.0%	14.55	16.2	$29.48	75	13.4	1	47.0%	9.93	14.70
4281616	$30.52	105	7.5	1	44.4%	26.28	13.9	$19.47	75	13.8	1	44.4%	12.51	18.00
4281648	$82.43	75	4.0	1	15.3%	14.04	3.1	$70.60	75	14.4	1	15.3%	11.57	2.10
4281664	$68.95	75	3.7	1	32.2%	21.13	9.6	$59.42	75	13.8	1	32.2%	17.30	8.00
4281712	$39.95	95	6.0	1	46.0%	28.14	16.5	$30.39	75	13.4	1	46.0%	15.47	15.60
4281808	$34.37	105	7.3	1	43.0%	25.82	17.7	$22.68	75	13.1	1	43.0%	12.32	25.10
4281824	$30.31	105	7.5	5	43.4%	25.82	13	$16.24	95	19.5	5	43.4%	17.93	35.40
4281832	$26.88	105	7.5	1	43.7%	21.26	12.8	$15.91	85	16.9	1	43.7%	12.55	23.50
4281856	$34.42	105	7.2	1	46.6%	30.62	16.7	$21.77	75	13.0	1	46.6%	14.42	25.00
4281936	$116.19	75	3.9	1	14.0%	19.91	3.6	$98.13	75	14.4	1	14.0%	16.28	2.50
4281960	$50.15	75	3.7	1	34.6%	11.56	11	$45.24	75	13.7	1	34.6%	9.58	10.10
4282008	$33.92	105	7.3	5	43.3%	25.82	17.5	$20.74	95	18.4	5	43.3%	17.93	47.70
4282080	$78.87	75	4.0	1	17.8%	17.33	2.5	$66.71	75	14.6	1	17.8%	14.23	1.60
4282088	$42.22	105	7.0	1	44.6%	30.07	23.4	$31.34	75	12.8	1	44.6%	14.18	23.20
4282128	$99.45	75	3.9	1	13.1%	14.12	3.5	$85.84	75	14.3	1	13.1%	11.63	2.80
4282160	$28.91	105	7.3	2	47.8%	22.58	17.6	$18.68	85	15.4	2	47.8%	13.27	40.60
4282200	$143.12	75	4.0	1	8.7%	15.07	2	$120.27	75	14.6	1	8.7%	12.38	1.00
4282296	$31.12	105	7.4	1	43.7%	25.82	14.2	$21.14	75	13.8	1	43.7%	12.32	16.20
4282320	$32.58	105	7.3	2	44.0%	25.82	16.3	$19.55	95	18.6	2	44.0%	17.91	44.80
4282344	$28.72	105	7.5	1	46.3%	26.43	13.1	$17.65	75	13.9	1	46.3%	12.58	17.80
4282376	$46.79	75	3.8	1	39.8%	14.96	10.4	$40.89	75	14.0	1	39.8%	12.34	8.70
4282616	$40.94	85	4.9	1	42.1%	17.53	14.7	$33.47	75	13.6	1	42.1%	11.83	12.70
4282704	$26.98	105	7.6	6	43.9%	25.82	10	$13.20	95	20.3	6	43.9%	17.93	26.90

4282736	$44.53	85	4.9	1	39.7%	18.31	14.9	$36.43	75	13.6	1	39.7%	12.33	12.90
4282792	$58.89	75	3.8	1	25.3%	11.67	7.3	$52.70	75	14.0	1	25.3%	9.66	6.60
4282832	$35.96	75	3.9	1	43.7%	14.94	7.6	$28.93	75	14.3	1	43.7%	12.33	7.10
4282848	$68.99	75	3.9	1	22.3%	17.42	4.6	$59.00	75	14.4	1	22.3%	14.30	3.50
4282920	$35.44	85	5.1	1	38.9%	18.31	8.5	$28.32	75	14.2	1	38.9%	12.33	7.10
4282952	$70.02	75	3.8	1	27.8%	20.11	7	$60.06	75	14.1	1	27.8%	16.48	5.70
4282968	$27.73	95	6.3	1	46.5%	18.7	11.7	$21.74	75	14.0	1	46.5%	10.65	10.70
4283104	$31.57	105	7.4	1	43.5%	25.84	14.8	$22.36	75	13.9	1	43.5%	12.32	14.50
4283120	$46.26	95	5.7	1	44.1%	21.94	24.3	$37.74	75	12.5	1	44.1%	12.33	24.00
4283136	$30.04	105	7.5	2	48.0%	32.33	11	$14.45	85	16.9	2	48.0%	18.50	25.70
4283172	$42.79	105	6.9	1	45.2%	28.5	26.1	$32.46	75	12.5	1	45.2%	13.45	26.00
4283200	$34.94	105	7.5	1	43.7%	34.03	12	$18.88	75	13.7	1	43.7%	15.77	19.80
4283248	$34.01	95	6.3	1	44.7%	25.86	11.2	$23.57	75	14.1	1	44.7%	14.35	11.40
4283272	$176.27	75	4.0	1	5.9%	11.88	1	$147.85	75	14.6	1	5.9%	9.89	0.10
4283280	$30.11	95	6.4	1	40.5%	21.94	8.3	$22.09	75	14.4	1	40.5%	12.33	7.30
4283328	$40.10	95	6.1	1	43.9%	27.6	15.6	$28.54	75	13.5	1	43.9%	15.18	16.50
4283376	$83.17	75	3.6	1	21.2%	11.58	10.7	$74.40	85	16.8	1	21.2%	11.59	7.60
4283472	$33.69	85	5.0	1	43.9%	14.55	12.6	$27.89	75	13.9	1	43.9%	9.93	10.80
4283496	$38.12	75	3.8	1	44.8%	13.57	9.4	$33.30	75	14.1	1	44.8%	11.21	7.80
4283504	$129.76	75	4.0	1	8.7%	12.97	1.8	$109.84	75	14.5	1	8.7%	10.69	0.90
4283512	$34.07	105	7.4	13	44.2%	30.81	13.9	$17.88	95	19.3	13	44.2%	21.52	38.90
4283520	$44.60	75	3.9	1	38.6%	15.62	7.9	$37.15	75	14.2	1	38.6%	12.88	6.40
4283584	$27.82	105	7.4	3	46.6%	23.44	14.5	$16.09	95	19.2	3	46.6%	16.36	40.00
4283656	$52.58	75	3.8	1	38.8%	18.26	10.1	$45.58	75	14.0	1	38.8%	15.02	8.40
4283680	$36.53	105	7.4	1	43.3%	32.57	15	$20.34	75	13.2	1	43.3%	15.16	27.40
4283720	$73.13	75	3.9	1	22.4%	18.8	4.7	$62.40	75	14.3	1	22.4%	15.42	3.60
4283736	$83.12	75	3.7	1	20.2%	13.04	8.6	$74.00	75	13.7	1	20.2%	10.77	7.90
4283848	$51.12	75	3.9	1	29.1%	11.66	7.5	$44.40	75	14.2	1	29.1%	9.66	6.00
4283856	$32.51	95	6.4	3	44.6%	27.43	9.7	$15.21	95	20.2	2	44.6%	22.35	31.50
4283928	$26.14	105	7.6	2	43.6%	25.82	8.4	$12.74	85	17.2	2	43.6%	15.01	19.40
4284064	$151.15	75	4.0	1	7.0%	12.53	1.1	$126.08	75	14.6	1	7.0%	10.32	0.20
4284144	$29.14	105	7.6	3	44.6%	29.35	10.5	$13.97	95	20.3	3	44.6%	20.30	28.70
4284176	$59.51	75	4.0	1	20.9%	13.61	3.2	$51.61	75	14.5	1	20.9%	11.23	2.40
4284248	$52.22	75	3.9	1	31.1%	14.97	6.7	$43.61	75	14.2	1	31.1%	12.35	5.80
4284272	$32.82	105	7.4	1	46.4%	32.56	13.1	$17.43	75	13.4	1	46.4%	15.15	25.20
4284280	$29.67	105	7.5	2	43.7%	25.82	12.4	$16.13	85	16.8	2	43.7%	15.01	26.50
4284288	$28.73	105	7.6	1	43.0%	25.82	11.9	$15.92	75	13.9	1	43.0%	12.31	22.30
4284376	$42.15	75	3.8	1	39.3%	12.83	9.3	$36.94	75	14.1	1	39.3%	10.61	7.70
4284440	$37.44	95	6.3	1	41.9%	29.86	10.1	$26.71	75	14.3	1	41.9%	16.44	9.10
4284512	$32.73	105	7.4	7	44.1%	30.62	12.4	$16.38	95	19.9	7	44.1%	21.39	34.50
4284552	$38.61	85	4.9	1	46.6%	20.82	13.2	$31.24	75	13.8	1	46.6%	13.93	11.40
4284696	$48.17	75	3.7	1	38.2%	14.81	9.9	$43.10	75	13.8	1	38.2%	12.21	9.00
4284704	$34.09	105	7.4	6	44.1%	32.57	12.4	$17.11	95	19.5	6	44.1%	22.50	34.80
4284856	$29.48	105	7.5	2	43.7%	25.82	12.2	$15.42	95	19.8	2	43.7%	17.91	33.30
4284931	$29.22	105	7.3	1	43.8%	17.31	19.4	$22.76	75	13.2	1	43.8%	8.62	20.40
4284968	$42.79	75	3.8	1	44.1%	16.44	9.6	$36.56	75	14.0	1	44.1%	13.55	8.40
4285076	$127.73	75	4.0	1	11.2%	18.75	1.7	$107.34	75	14.6	1	11.2%	15.35	0.90
4285078	$511.33	75	3.9	1	2.8%	18.94	1.2	$423.73	75	14.5	1	2.8%	15.43	0.40
4285088	$45.45	75	3.9	1	27.9%	10.81	6.1	$39.51	75	14.2	1	27.9%	8.96	4.80
4285152	$29.89	105	7.5	24	44.6%	31.01	9.6	$13.81	95	20.4	24	44.6%	21.65	26.70
4285188	$32.64	105	7.6	9	44.0%	34.27	10.5	$14.84	95	20.5	9	44.0%	23.57	28.60
4285272	$31.76	85	5.1	1	44.8%	18.6	9.3	$25.27	75	14.3	1	44.8%	12.52	7.90
4285312	$26.02	105	7.5	16	44.3%	21.36	11.9	$14.34	95	19.7	16	44.3%	14.98	32.70
4285320	$33.01	85	5.2	1	43.6%	20.19	8.2	$25.22	75	14.3	1	43.6%	13.53	7.30
4285408	$29.12	105	7.5	9	43.3%	25.82	11.3	$14.50	95	19.9	9	43.3%	17.93	30.80
4285464	$34.11	105	7.3	3	43.3%	25.82	17.6	$20.96	95	18.3	3	43.3%	17.91	48.10
4285496	$37.58	105	7.4	1	43.4%	35.87	13.7	$24.94	75	14.0	1	43.4%	16.54	12.90

4285528	$145.87	75	3.9	1	8.6%	14.01	2.7	$123.45	75	14.3	1	8.6%	11.53	1.70
4285592	$25.98	105	7.6	4	44.2%	25.81	8.8	$12.30	95	20.5	4	44.2%	17.93	23.80
4285632	$27.97	105	7.5	2	45.9%	23.96	13.6	$15.74	95	19.4	2	45.9%	16.70	36.50
4285664	$31.35	105	7.4	1	45.3%	25.81	16.1	$20.26	75	13.3	1	45.3%	12.32	22.70
4285712	$129.19	75	3.7	1	12.9%	15.05	6.4	$112.88	75	13.8	1	12.9%	12.38	5.80
4285728	$39.94	85	5.1	1	38.6%	18.31	10.7	$32.30	75	14.1	1	38.6%	12.33	9.10
4285792	$55.21	85	4.5	1	43.5%	20.84	21.9	$45.67	75	12.7	1	43.5%	13.94	19.30
4285872	$69.91	75	3.6	1	28.6%	14.98	11.7	$60.84	75	13.6	1	28.6%	12.35	9.90
4285968	$48.13	75	3.9	1	29.5%	14.98	4.9	$41.59	75	14.4	1	29.5%	12.35	3.70
4286000	$30.46	105	7.2	1	44.4%	19.53	19.4	$23.55	85	16.2	1	44.4%	11.60	23.40
4286056	$31.44	105	7.4	1	43.6%	25.82	14.5	$20.36	75	13.6	1	43.6%	12.32	19.10
4286112	$30.90	105	7.4	1	43.5%	25.82	13.7	$17.70	85	16.5	1	43.5%	15.02	25.40
4286128	$109.91	75	4.0	1	11.7%	15.71	2	$93.14	75	14.5	1	11.7%	12.91	1.20
4286160	$132.24	75	4.0	1	8.9%	13.74	1.9	$111.27	75	14.5	1	8.9%	11.31	0.90
4286224	$29.51	105	7.4	1	44.5%	23.49	14.7	$21.85	75	13.7	1	44.5%	11.31	13.80
4286288	$30.54	105	7.5	4	42.8%	25.82	12.8	$16.13	95	19.8	4	42.8%	17.93	34.90
4286352	$33.03	105	7.3	1	43.4%	25.82	16.2	$21.53	75	13.2	1	43.4%	12.32	22.80
4286432	$171.87	75	4.0	1	7.4%	15.5	1.8	$144.67	75	14.5	1	7.4%	12.72	0.90
4286528	$32.28	105	7.4	1	43.7%	25.82	16	$21.21	75	13.6	1	43.7%	12.32	20.70
4286560	$50.64	75	3.8	1	41.3%	19.52	9.8	$43.94	75	14.0	1	41.3%	16.01	8.10
4286568	$281.93	75	4.0	1	4.6%	17.06	1	$234.36	75	14.6	1	4.6%	13.95	0.20
4286576	$60.37	75	3.5	1	42.4%	14.96	17.9	$51.08	75	13.1	1	42.4%	12.34	15.50
4286640	$33.60	105	7.4	1	41.8%	25.85	15.7	$24.48	75	13.8	1	41.8%	12.32	14.70
4286656	$45.79	75	3.9	1	32.2%	13.79	6.7	$40.32	75	14.2	1	32.2%	11.38	5.80
4286672	$92.17	75	3.8	1	17.5%	14.03	7	$80.93	75	14.0	1	17.5%	11.57	6.20
4286712	$89.37	75	3.8	1	15.4%	11.89	5.3	$76.60	75	14.1	1	15.4%	9.82	4.00
4286744	$30.60	105	7.5	1	43.4%	25.82	13.2	$18.32	75	13.6	1	43.4%	12.32	19.90
4286776	$29.72	105	7.5	3	43.8%	25.82	12.4	$15.80	95	19.5	3	43.8%	17.92	34.10
4286856	$32.82	105	7.5	1	45.0%	32.12	12.4	$17.00	75	13.7	1	45.0%	14.96	23.70
4286880	$28.24	105	7.5	9	43.8%	25.82	10.2	$14.27	95	19.8	9	43.8%	17.93	28.30
4286920	$32.79	105	7.4	1	43.3%	25.82	16.3	$22.24	75	13.6	1	43.3%	12.32	20.00
4286952	$44.57	75	3.9	1	37.1%	17.7	6.2	$39.21	75	14.3	1	37.1%	14.55	5.30
4286968	$29.13	105	7.6	4	43.0%	25.82	12.4	$15.01	95	20.1	4	43.0%	17.93	33.20
4286976	$39.25	95	6.2	1	43.2%	30.07	11.7	$28.67	75	14.0	1	43.2%	16.55	10.80
4287040	$46.64	75	3.9	1	31.8%	14.97	6	$40.62	75	14.4	1	31.8%	12.35	5.00
4287048	$28.03	105	7.6	18	43.0%	25.82	10.8	$13.94	95	20.2	18	43.0%	17.93	29.10
4287064	$127.60	75	4.0	1	9.5%	15.06	1.5	$107.86	75	14.6	1	9.5%	12.38	0.70
4287080	$66.13	75	3.9	1	21.1%	15	4.4	$56.56	75	14.4	1	21.1%	12.36	3.20
4287088	$29.57	105	7.5	1	43.3%	25.82	11.8	$19.90	75	14.0	1	43.3%	12.32	12.80
4287136	$56.06	75	4.0	1	24.7%	14.99	4.5	$48.19	75	14.5	1	24.7%	12.35	3.40
4287208	$75.87	75	4.0	1	14.8%	13.06	1.9	$64.85	75	14.7	1	14.8%	10.77	1.00
4287224	$28.79	105	7.4	1	46.5%	23.08	16.1	$20.01	75	13.5	1	46.5%	11.14	20.40
4287232	$30.46	105	7.4	1	43.8%	23.08	15.9	$19.07	85	16.2	1	43.8%	13.53	30.40
4287240	$55.37	75	3.9	1	29.4%	14.36	7.4	$47.79	75	14.2	1	29.4%	11.84	5.90
4287272	$30.91	105	7.4	2	44.4%	24.79	15.6	$18.39	85	16.0	2	44.4%	14.45	35.90
4287320	$42.50	105	7.1	1	44.7%	37	19.7	$28.52	75	13.0	1	44.7%	17.02	22.10